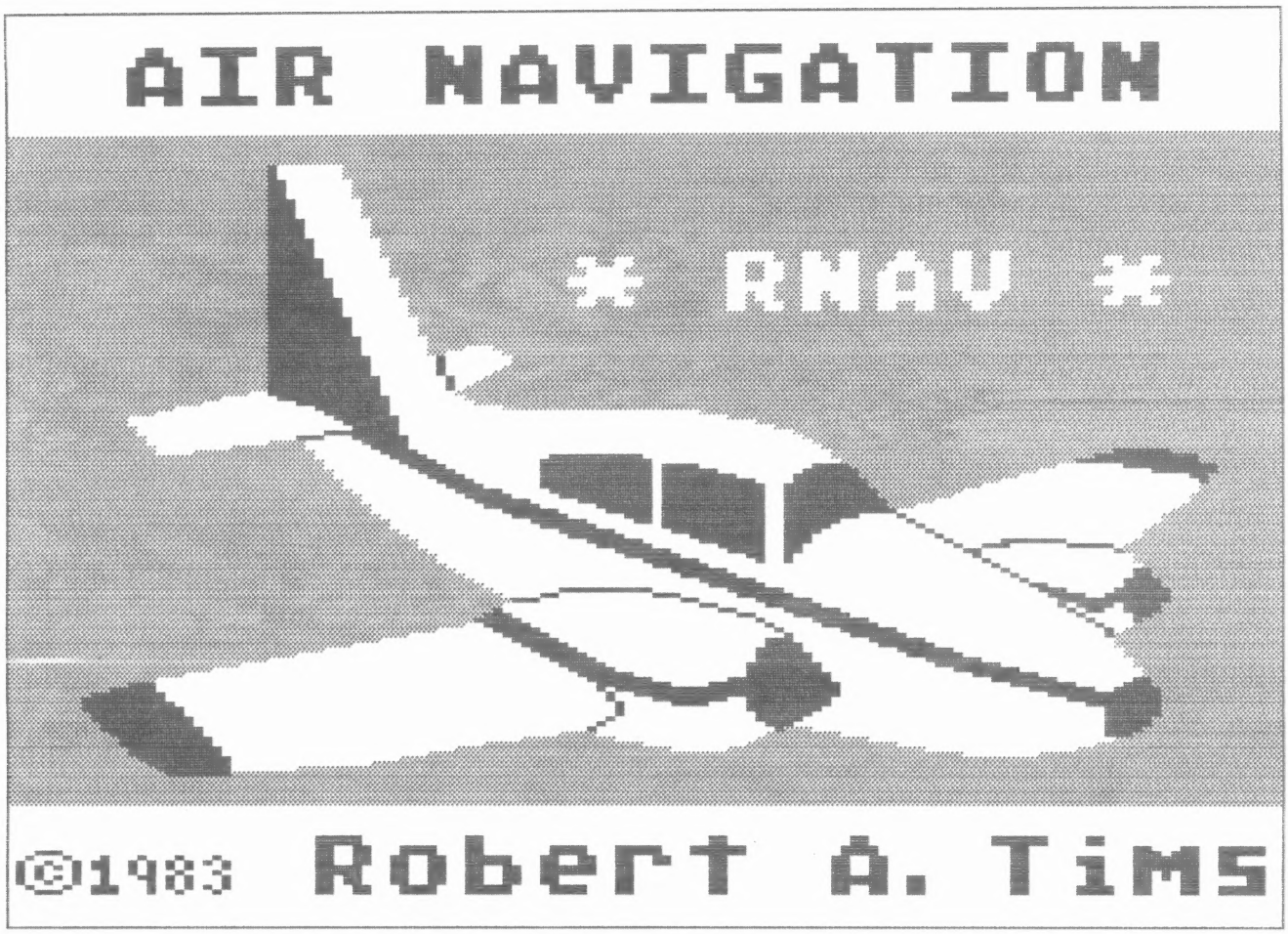

DOCUMENTATION

AIR NAVIGATION/*RNAV* PROGRAM
VARIABLE CROSS-REFERENCE TABLE
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AIR NAVIGATION/*RNAV*

RNAV PROGRAM

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100 REM AIR NAVIGATION/*RNAV* COPYRIGHT 1983 ROBERT A. TIMS 1-21-84
110 POKE 580,1:POKE 16,112:POKE 53774,112:GOTO 1000
200 X=SIN(LAT1)*SIN(LAT2)+COS(LAT1)*COS(LAT2)*COS(LNG1-LNG2):IF X>=N1 THEN X=N0:B=N0:GOTO 290
220 X=N90-ATN(X/SQR(-X*X+N1)):IF Y=FACT THEN RETURN
230 B=SIN(LAT1)*SIN(LAT2)+COS(LAT1)*COS(LAT2):IF B>=N1 THEN B=N0:GOTO MAX
240 B=N90-ATN(B/SQR(-B*B+N1))
250 B=SIN(B)/SIN(X):IF B=N1 THEN B=N90:GOTO 270
260 B=ATN(B/SQR(-B*B+N1))
270 B=B*SGN(LAT2-LAT1):IF SGN(LNG1-LNG2)<=N0 THEN B=N360-N90+B:GOTO 290
280 B=N90-B:IF B=N0 THEN B=N360
290 RETURN
300 GOSUB IDI:GOSUB NAV:GOSUB N200:MEM=B-MC:IF ABS(MEM)>N90+N90 THEN MEM=MEM-N360*SGN(MEM)
310 IF ABS(MEM)>N90 THEN RETURN
320 Y=SIN(X)*SIN(N90-ABS(MEM)):Y=INT(ATN(Y/SQR(-Y*Y+N1))*N60+HALF):IF L<=Y THEN RETURN
330 IF Y<=Z THEN RETURN
340 A=Y-Z:Z=Y:GOSUB 2400:? #K;"  DIST=";A;" NM  REM=";S+L-Z;" NM";:VAR1=VAR2
350 A=N2:GOSUB FAC:ID2$=ID$(N2):GOSUB 2960:GOSUB 2180:? #K;ID2$;" ";SCR$;
360 Y=(B+N90+N90)+SGN(MEM)*(N90-ABS(MEM))+VAR2:GOSUB 2430:SCR$=STR$(INT(Y*N10+FACT+HALF)):SCR$=SCR$(N2)
370 X=SIN(X)*SIN(ABS(MEM)):X=INT(ATN(X/SQR(-X*X+N1))*N60*N10+HALF):GOTO 2170
400 X=VAL(FLT$(M-N3,M-N1))/N10/N60:Y=VAL(FLT$(M-N7,M-N4))/N10-VAR2
410 B=SIN(X)*COS(Y):MEM=LAT2:LAT2=LAT2+ATN(B/SQR(-B*B+N1))
420 B=SIN(X)*SIN(Y)/COS((MEM+LAT2)/N2):LNG2=LNG2-ATN(B/SQR(-B*B+N1)):RETURN
450 SCR$=STR$((INT(B*N10+HALF))+FACT):SCR$=SCR$(N2):X=(INT(X*N60*N10+HALF)):RETURN
480 POKE DLIST+N20,N60+N5:POKE DLIST+N21,N32:POKE DLIST+N22,N100+N4:FOR X=N0 TO N9:POKE DLIST+N10+X,N7:NEXT X
490 RETURN
500 SCR$=BL$:POSITION X+N1,N20:FOR D=N1 TO Y:? CHR$(N14);:NEXT D:GOSUB N9*N100:D=N1:B=N0
520 TRAP N520:GET #N1,K:TRAP MENU:IF K=DL-N1 THEN GOTO N620+N10
530 GOSUB 960:IF K<N32 OR K=BS-N1 OR K=BS+N1 OR (K>N90 AND K<N90+N7) THEN GOTO N520
540 IF K=BS AND X=N27 AND B=N2 AND D=N4 THEN D=N3:POSITION X+D,N20:? CHR$(N14)
550 IF K=BS THEN D=D-N1:IF D=N0 THEN D=N1
560 IF K=BS THEN POSITION X+D,N20:? CHR$(N14):GOTO N520
570 IF D=Y+N1 THEN GOTO ENTR
580 IF Y<N5 AND K>N90+N6 THEN K=K-N32
590 IF B>=D THEN B=N0
600 IF (Y>N4 AND A<N3) OR S>N100 THEN 650
610 IF X=N27 THEN GOTO N620+N60
620 POSITION X+D,N20:? CHR$(K);:D=D+N1:GOTO N520
630 B=D-N1:FOR D=D TO Y:POSITION X+D,N20:? " ";:NEXT D:POSITION X+N1,N20
640 X=USR(IO,N6,N7,ADR(SCR$),Y):? CHR$(DL):RETURN
650 IF B=N0 AND K=N21+N25 THEN B=D:GOTO N620
660 IF K>N22+N25 AND K<N59-N1 THEN GOTO N620
670 GOTO N520
680 IF K>N20+N27 AND K<N60-N2 AND (D<N3 OR B) THEN GOTO N620
690 IF B>N0 OR  NOT (K=N20+N25 OR K=N21+N22 OR K=N60+N9 OR K=N60+N27) THEN GOTO N520
700 B=D:IF D>1 THEN POSITION X+D,N20:? " ";:D=N3:GOTO N620
710 GOTO N620
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720 GOSUB KEY:IF K=N90-N1 OR K=N100+N21 THEN NO=N0:RETURN
730 IF K<>N60+N18 AND K<>N100+N10 THEN GOTO CHOICE
740 NO=N1:RETURN
760 POSITION N0,N4:? CHR$(DL)
770 POSITION N0,N4:? CHR$(DL);CHR$(DL):RETURN
780 POSITION N0,N4:? CHR$(DL+N1);CHR$(DL+N1);CHR$(DL+N1):RETURN
790 X=USR(CLEAR,SCREEN+N100+N20,N620+N100,N0):RETURN
800 GRAPHICS N0:POKE 752,N1:? CHR$(DL);:POKE N16,N112:POKE 53774,N112:POKE C2,X:POKE C4,Y:POKE 756,DL
810 DLIST=PEEK(SDLSTL)+PEEK(SDLSTL+N1)*N128*N2:POKE DLIST+N6,N6:POKE DLIST+N7,N10:POKE DLIST+N8,N6
820 POKE DLIST+N9,N128+N10:SCREEN=PEEK(DLIST+N4)+PEEK(DLIST+N5)*N128*N2:POKE ENTR+N12,N90:POKE ENTR+N13,N100+N8
830 POKE 54286,GRN-N2:X=USR(CLEAR,SCREEN+N20+N20,N20,N60+N3):Y=N0:RETURN
840 GOSUB INIT:POSITION N2,N0:? "ENTRIES: ";ENTRY
850 IF F THEN POSITION N21,Y:? "FORMAT: DD MM.d'":RETURN
860 POSITION N19,Y:? "FORMAT: DD MM' SS";CHR$(SS):RETURN
870 POKE C2-N2,N12:POKE C2-N1,K2:POKE C2,N0:POKE C4,N200-K2:Y=USR(CLEAR,TEXT,N60,N0)
880 POKE SDLSTL,N20+N18:POKE SDLSTL+N1,BS+N3:POKE N90-N2,N112+N32:POKE N90-N1,DL-N1:RETURN
900 POKE N20,N0:SOUND N0,N60,N10,N8
920 IF PEEK(N20)<N10 THEN 920
930 SOUND N0,N0,N0,N0:RETURN
940 X=USR(CLEAR,SCREEN,N20+N20,N0):RETURN
950 TRAP KEY:GOSUB N9*N100:GET #N1,K:TRAP MENU
960 K=K-INT(K/N128)*N128:RETURN
980 SCR$="NAVAID  ":IF A THEN SCR$="AIRPORT ":IF A>N1 THEN SCR$="WAYPOINT":IF A=N3 THEN SCR$="INTERSECTION"
990 RETURN
1000 READ HALF,N0,N1,N2,N3,N4,N5,N6,N7,N8,N9,N10,N11,N12,N13,N14,N15,N16,N18,N19,N20
1010 DATA .5,0,1,2,3,4,5,6,7,8,9,10,11,12,13,14,15,16,18,19,20
1040 READ N21,N22,N25,N27,N32,N59,N60,N90,N100,N112,N128,N200,N360,N520,N620
1050 DATA 21,22,25,27,32,59,60,90,100,112,128,200,360,520,620
1060 READ CMP,CLEAR,MOVE,IO,SDLSTL,INDEX,MAX,FACT,TEXT,ROUTE
1070 DATA 27760,1664,1698,1740,560,28061,250,10000,39824,27660
1080 READ C2,C4,SS,K0,K1,K2,K3,K4,DL,BS,GRN,PUR,CH,NULL
1090 DATA 710,712,34,48,49,50,51,52,156,126,194,82,764,255
1100 READ INIT,INITS,INITP,KEY,MENU,CHOICE,SCRL,DSCRL,SCLR,LCLR,ENTR,FAC,NAV,IDI,FLT
1110 DATA 800,840,870,950,1300,720,760,780,790,940,500,980,1800,1900,3600
1120 READ ID,GID,LAT,GLAT,PRLAT,LNG,GLNG,PRLNG,VAR,GVAR,PRVAR,STORE,INPUT,EMENU,EDIT,MSG
1130 DATA 1400,1420,1500,1520,1550,1600,1620,1650,1700,1720,1750,1480,6000,7000,7070,9500
1150 DIM ID$(N4),LAT$(N6),LNG$(N7),VAR$(N3),SCR$(N18),BL$(N8),FLT$(MAX),ID1$(N6),ID2$(N6),T$(N13),P$(N21),D$(N14)
1160 BL$="        ":ID$=BL$:LAT$=BL$:LNG$=BL$:VAR$=BL$:FLT$(MAX)=BL$:P$=FLT$
1200 OPEN #N1,N4,N0,"K":X=USR(CLEAR,TEXT,960,N0):DEG
1210 FOR X=N0 TO N5:READ D:POKE 33233+X,D:NEXT X:DATA 6,6,6,65,38,129
1230 SCR$=" DATA ":GOSUB IDI+N90:TRAP IDI+N20:OPEN #N3,N4,N0,"D:NAV":GOSUB IDI+N60
1250 X=USR(IO,N3,N7,INDEX-N1,5002):CLOSE #N3:OPEN #N3,N4,N0,"D:P":X=USR(IO,N3,N7,ADR(P$),N21)
1260 ENTRY=PEEK(INDEX):F=PEEK(INDEX-N1)
1270 X=USR(MOVE,57344,39936,1024):FOR X=N1 TO N6:READ D:POKE 40448+X,D:NEXT X:DATA 56,108,108,56,0,0
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1300 D$=CHR$(N0):CLOSE #N3:IF ENTRY=N0 THEN GOSUB MSG-ENTR
1320 GOSUB INITP:POSITION N3,N0:? "1  ROUTE ENTRY"
1330 POSITION N22+N1,N0:? "2  LOAD FLIGHT":POSITION N3,N1:? "3  AIRNAV DATA"
1350 TRAP MENU+K2:GET #N1,K:TRAP MENU:IF K=N27 THEN POKE 580,N0:POKE 106,160:GRAPHICS N0:NEW
1360 GOSUB 960:IF K=N20*N4 OR K=N112 THEN 8000
1370 IF K<K1 OR K>K3 THEN GOTO MENU+K2
1380 K=K-K0:ON K GOTO 3000,5000,INPUT
1400 POSITION N12,N20:? "IDENTIFIER?":Y=N3+A:IF A=N3 THEN Y=N5
1410 X=N20+N4:GOTO ENTR
1420 ID$=BL$:IF  NOT A THEN ID$=CHR$(0)
1430 IF (A AND B<N4) OR  NOT A THEN ID$(N2)=SCR$
1440 IF A AND B=N4 THEN ID$=SCR$
1450 X=USR(CMP,ADR(ID$),ENTRY):RETURN
1480 X=USR(MOVE,ADR(ID$),MEM,N20):S=N1:RETURN
1500 POSITION N11,N20:? "LATITUDE?":Y=N7-F:X=N21:GOTO ENTR
1520 LAT$=BL$:K=N1:SCR$=STR$(INT(VAL(SCR$)*FACT)+FACT*N100):IF VAL(SCR$))1900000 THEN RETURN
1530 IF VAL(SCR$(N4,N5)))N59 OR ( NOT F AND VAL(SCR$(N6)))N59) THEN RETURN
1540 LAT$=SCR$(N2):K=N0:RETURN
1550 ? #C;VAL(LAT$(N1,N2));D$;" ";LAT$(N3,N4);:IF F THEN ? #C;".";LAT$(N5,N5);CHR$(SS);:RETURN
1560 IF  NOT F THEN ? #C;"' ";LAT$(N5);CHR$(SS);:RETURN
1600 POSITION N10,N20:? "LONGITUDE?":Y=N8-F:X=N21:GOTO ENTR
1620 LNG$=BL$:K=N1:SCR$=STR$(INT(VAL(SCR$)*FACT)+10000000):IF VAL(SCR$))11800000 THEN RETURN
1630 IF VAL(SCR$(N5,N6)))N59 OR ( NOT F AND VAL(SCR$(N7)))N59) THEN RETURN
1640 LNG$=SCR$(N2):K=N0:RETURN
1650 ? #C;VAL(LNG$(N1,N3));D$;" ";LNG$(N4,N5);:IF F THEN ? #C;".";LNG$(N6,N6);CHR$(SS);:RETURN
1660 IF  NOT F THEN ? #C;"' ";LNG$(N6);CHR$(SS);:RETURN
1700 POSITION N7,N20:? "MAGNETIC VARIATION?":Y=N3:X=N27:GOTO ENTR
1720 VAR$=BL$:TRAP 1730:K=N1:X=VAL(SCR$(N1,N1)):X=VAL(SCR$):K=N0:IF ASC(SCR$(N3))=45 OR ASC(SCR$(N3))=69 THEN X=-X
1730 IF K THEN X=VAL(SCR$(N2)):IF ASC(SCR$)=N20+N25 OR ASC(SCR$)=N60+N9 THEN X=-X
1740 SCR$=STR$(INT(X)):VAR$(N4-LEN(SCR$))=SCR$:TRAP MENU:RETURN
1750 X=VAL(VAR$):? #C;ABS(X);D$;" ";:IF X<N0 THEN ? #C;"E";:RETURN
1760 ? #C;"W";:RETURN
1800 IF B THEN LAT2=VAL(FLT$(M-N16,M-N11)):LNG2=VAL(FLT$(M-N10,M-N4)):VAR2=VAL(FLT$(M-N3,M-N1))
1810 IF  NOT B THEN GOSUB 1450:IF X=CMP THEN GOTO 4310
1820 IF  NOT B THEN Y=USR(MOVE,X,ADR(ID$),N20):LAT2=VAL(LAT$):LNG2=VAL(LNG$):VAR2=VAL(VAR$)
1850 IF  NOT F THEN LAT2=(INT(LAT2/N100)+(LAT2/N100-INT(LAT2/N100))/N6*N10)*N100
1860 IF  NOT F THEN LNG2=(INT(LNG2/N100)+(LNG2/N100-INT(LNG2/N100))/N6*N10)*N100
1870 LAT2=(INT(LAT2/FACT)+(LAT2/FACT-INT(LAT2/FACT))/N6*N10)
1880 LNG2=(INT(LNG2/FACT)+(LNG2/FACT-INT(LNG2/FACT))/N6*N10):RETURN
1900 ID$=FLT$(M+N2,M+N5)
1910 B=ASC(FLT$(M+N1)):M=M+N6+B*N16:RETURN
1920 GOSUB INITP:POSITION N20,N0:? "FORMAT";SCR$;"DISK Y/N":GOSUB CHOICE:IF NO THEN GOTO C2+N520
1930 SCR$=" PRGM ":GOSUB IDI+N90:GOSUB IDI+N60:TRAP C2+N520:RUN "D:DISK"
1960 GOSUB INITP:POSITION N20+N4,N0:? "LOADING";SCR$:RETURN
1990 GOSUB INITP:CLOSE #N3:POSITION N22,N0:? "INSERT";SCR$;"DISK":POSITION N4,N1:? "PUSH ANY KEY":GOTO KEY
2000 POKE ROUTE+NO,M:A=ASC(FLT$(M)):IF A=N5 THEN RETURN
2010 IF A=N4 THEN GOSUB IDI+N10:GOTO IDI+N100
2020 NO=NO+N1:IF A=N2 THEN GOSUB IDI+N10:GOTO IDI+N100
2030 IF A=N0 OR A=N1 THEN GOSUB IDI:GOTO NAV
2050 M=M+N6:GOSUB IDI:GOSUB NAV:M=M+N7:GOTO N200+N200
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2100 A=ASC(FLT$(M)):IF A=N0 OR A=N1 THEN ID2$=FLT$(M+N3-A,M+N5):GOSUB IDI:GOTO NAV
2110 A=N3:ID2$=FLT$(M,M+N4):M=M+N6:GOSUB IDI:GOSUB NAV:M=M+N7:GOTO N200+N200
2140 ID2$=FLT$(M+N3,M+N5):GOSUB IDI:GOSUB NAV:GOSUB N200:B=B+N90+N90+VAR2:IF B>N360 THEN B=B-N360
2150 VAR1=VAR2:GOSUB N200+MAX
2160 ? #K;"* ";ID2$;
2170 ? #K;" ";SCR$(N1,N3);".";SCR$(N4);D$;" ";INT(X/N10);".";X-(INT(X/N10)*N10);" NM";:RETURN
2180 IF K=N2 THEN ? #K:? #K;" ";:RETURN
2190 POSITION N0,N6:? CHR$(DL):POSITION N1,N20:RETURN
2300 X=N112:Y=N112:GOSUB INIT:POSITION N4,N2:? "flight index":OPEN #N3,N6,N0,"D:*.F?"
2310 FOR X=N0 TO N1:C=N5+N18*X:FOR Y=N1 TO N13:SCR$=FLT$:K=USR(IO,N3,N5,ADR(SCR$),N18):POSITION C,N4+Y
2320 A=192+Y+X*N13:? "";CHR$(A);"";SCR$(N2,N10):NEXT Y:NEXT X:CLOSE #N3:POKE C2,GRN:POKE C4,GRN:RETURN
2400 GOSUB 2180:Y=INT(MC+VAR1+HALF):GOSUB 2430:? #K;" MC=";SCR$;D$;
2410 IF VAR1<>VAR2 THEN Y=INT(MC+VAR2+HALF):GOSUB 2430:? #K;"/";SCR$;D$;:RETURN
2420 RETURN
2430 IF Y<=N0 THEN Y=Y+N360
2440 IF Y>N360 THEN Y=Y-N360
2450 SCR$=STR$(Y+FACT):SCR$=SCR$(N3):RETURN
2500 GOSUB GID:C=N6:IF X<>CMP THEN GOTO 2560
2510 IF M+N22>MAX THEN GOTO 2800
2520 Y=N3:GOSUB INITS+N10:GOSUB 6400:IF NO=N1 THEN GOTO SCLR
2530 IF ENTRY<MAX THEN POSITION N6,N20:? "STORE WITH THE NAV DATA Y/N?":GOSUB CHOICE
2540 IF NO THEN FLT$(M+N1,M+N1)=CHR$(N1):FLT$(M+N6,M+N11)=LAT$:FLT$(M+N12,M+N18)=LNG$:FLT$(M+N19,M+N21)=VAR$:C=N22
2550 IF  NOT NO THEN MEM=INDEX+N1+N20*ENTRY:GOSUB 6550:C=N6
2560 FLT$(M+N2,M+N5)=ID$:M=M+C:GOTO SCLR
2600 IF M+N19>MAX THEN 2800
2610 FLT$(M,M+N4)=SCR$:M=M+N6:A=N0:ID2$=SCR$(N1,N5):GOSUB 2960
2620 GOSUB LCLR:POSITION N11-INT(LEN(ID2$)/N2),N0:? ID2$;" REFERENCE NAVAID"
2630 GOSUB ID:IF B=N0 THEN A=N3:M=M-N6:FLT$(M+N1,M+N1)=CHR$(N0):RETURN
2640 IF B<>N0 THEN GOSUB 2500:IF B=N0 THEN 2630
2650 POSITION N13,N15:? "REFERENCE: ";ID$(N2)
2660 POSITION N13,N20:? "RADIAL?":Y=N5:X=N21:GOSUB ENTR:IF B=N0 THEN M=M-C:GOSUB SCLR:GOTO 2630
2670 IF VAL(SCR$)>N60*N6 THEN 2660
2680 IF VAL(SCR$)=N0 THEN SCR$=STR$(N60*N6)
2690 SCR$=STR$((VAL(SCR$)+INPUT)*N10):FLT$(M,M+N3)=SCR$(N2)
2700 GOSUB SCRL:POSITION N13,N15:? "RADIAL: ";SCR$(N2,N4);".";SCR$(N5,N5);""
2710 POSITION N13,N20:? "DISTANCE?":S=S+N112:Y=N4:X=N22:GOSUB ENTR:S=S-N112
2720 IF B=N0 THEN POSITION N0,N15:? CHR$(DL):GOSUB DSCRL:GOTO 2660
2730 IF VAL(SCR$)=N100 THEN 2710
2740 SCR$=STR$((VAL(SCR$)+N100)*N10):SCR$=SCR$(N2)
2750 X=VAL(SCR$):GOSUB SCRL:POSITION N13,N15:? "DISTANCE: ";INT(X/N10);".";X-(INT(X/N10)*N10)
2760 GOSUB 6560:IF NO THEN ? CHR$(DL):POSITION N0,N15:? CHR$(DL):GOSUB DSCRL:GOTO 2710
2770 FLT$(M+N4,M+N6)=SCR$:M=M+N7:GOTO SCLR
2780 A=N3:M=M-N6:GOTO SCLR
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2800 B=N0:POSITION N14,N12:? "NO MORE ROOM!":GOTO 6890
2820 GOSUB LCLR:POSITION N9,N0:? ID2$;" TERMINAL WAYPOINT":FLT$(M,M)=CHR$(N4):A=N0:GOTO ID
2850 POSITION N0,N4:? CHR$(DL):POSITION N8-A,N20:RETURN
2900 POSITION N18-(LEN(ID1$)+LEN(ID2$))/N2,N0:? ID1$;" TO ";ID2$:RETURN
2910 X=PUR:Y=PUR:GOSUB INIT:POSITION N5,N2:? "NAVIGATION":RETURN
2920 ID1$=T$(N2,N1+ASC(T$)):ID2$=T$(N2+ASC(T$))
2930 IF D<N0 THEN ID2$=ID1$:ID1$=T$(N2+ASC(T$))
2940 IF ASC(ID1$)=N32 THEN ID1$=ID1$(N2):GOTO 2940
2950 IF ASC(ID1$(LEN(ID1$)))=N32 THEN ID1$=ID1$(N1,LEN(ID1$)-N1):GOTO 2950
2960 IF ASC(ID2$)=N32 THEN ID2$=ID2$(N2):GOTO 2960
2970 IF ASC(ID2$(LEN(ID2$)))=N32 THEN ID2$=ID2$(N1,LEN(ID2$)-N1):GOTO 2970
2980 RETURN
3000 X=PUR:Y=PUR:GOSUB INIT:POSITION N3,N2:? "ROUTE PLANNING":POSITION N5,N0
3010 ? "1NAV 2ARP 3INTERSECTION":POSITION N7,N12:? "DEPARTURE POINT (1-3)?";
3020 X=USR(CLEAR,ADR(FLT$),MAX,N0):GOSUB KEY:IF K=N27 THEN GOSUB 6600:GOTO MENU
3030 IF K<K1 OR K>K3 THEN 3020
3040 ? CHR$(DL):POKE C2,N112:IF K=K3 THEN K=K4
3050 A=K-K1:M=N1:GOSUB LCLR:GOSUB FAC:POSITION N12-A,N0:? "DEPARTURE ";SCR$:GOSUB ID:IF B=N0 THEN 3000
3060 FLT$(N1,N1)=CHR$(A):ID2$=SCR$(N1,N3+A):IF A<N3 THEN GOSUB 2500
3070 IF A=N3 THEN GOSUB 2600
3080 IF B=N0 THEN 3000
3090 IF A=N1 THEN GOSUB 2820:IF B<>N0 THEN GOSUB 2500:IF B=N0 THEN A=N1:GOTO 3090
3100 ID1$=ID2$:IF M+N6>MAX THEN GOSUB 2800:GOTO 3340
3110 GOSUB SCLR:POKE C2,PUR:POSITION N1,N0:? "1NAV2ARP3INTERSECTION4WAYPOINT"
3120 POSITION N12,N10:? "LAST FIX WAS ";ID1$:POSITION N11,N14:? "NEXT FIX (1-4)?"
3130 GOSUB KEY:IF K=N27 THEN 3300
3140 IF K<K1 OR K>K4 THEN 3130
3150 GOSUB LCLR:POKE C2,N112:POSITION N13,N0:? "NAVIGATION FIX":A=K:IF A>K2 THEN K=K4:IF A=K4 THEN K=K3
3160 A=K-K1:FLT$(M,M)=CHR$(A):GOSUB FAC:X=A:IF A=N2 THEN A=N0:X=N1
3170 POSITION N10-X,N14:? "NEXT FIX IS A";:IF A<>N0 THEN ? "N";
3180 ? " ";SCR$:GOSUB ID:IF B=N0 THEN 3110
3190 GOSUB SCLR:ID2$=SCR$(N1,N3+A):IF A<N3 THEN GOSUB 2500
3200 IF A=N3 THEN GOSUB 2600
3210 IF B=N0 THEN 3110
3220 GOTO 3100
3300 IF A=N1 THEN GOSUB SCLR:POKE C2,N112:GOSUB 2820:IF B<>N0 THEN GOSUB 2500:IF B=N0 THEN A=N1:GOTO 3300
3340 FLT$(M,M)=CHR$(N5):GOTO FLT-N100
3400 X=PUR:Y=PUR:GOSUB INIT:POSITION N4,N2:? "flight route":M=N1
3410 A=ASC(FLT$(M)):IF A>N5 THEN A=N3
3420 GOSUB FAC:ON A GOTO 3430,3430,3450,3470,3480
3430 IF A=N2 THEN A=N0
3440 GOSUB 2850:ID2$=FLT$(M+N3-A,M+N5):? ID2$;" ";SCR$;:GOSUB IDI+N10:GOTO 3410
3450 GOSUB 2850:ID2$=FLT$(M,M+N4):GOSUB 2960:? BL$(LEN(ID2$),N5);ID2$;" ";SCR$
3455 M=M+N6:B=ASC(FLT$(M)):IF  NOT B THEN GOSUB IDI+N10
3460 M=M+N7:GOTO 3410
3470 ? "* ";SCR$;" ";FLT$(M+N3,M+N5):GOSUB IDI+N10:GOTO 3410
3480 POSITION N0,N4:? CHR$(DL);CHR$(DL);CHR$(DL):ID1$=FLT$(N1,N5):IF ASC(FLT$)<N3 THEN ID1$=FLT$(N4-ASC(FLT$),N6)
3490 GOSUB LCLR:GOSUB 2940:T$=CHR$(LEN(ID1$)):T$(N2)=ID1$:T$(LEN(ID1$)+N2)=ID2$:GOSUB 2900:D=N1:RETURN
```

```
3500 GOSUB 3400:GOSUB 6560:GOSUB 6600:IF NO THEN 3000
3600 GOSUB 2910:GOSUB 480:POSITION N25+N1,N3:? CHR$(144);" menu":POSITION N25+N1,N4:? "1 view"
3610 POSITION N25+N1,N5:? "2 print":POSITION N25+N1,N6:? "3 reverse":POSITION N25+N1,N7:? "4 save"
3620 GOSUB 2920:GOSUB 2900
3630 GOSUB KEY:IF K=K0 THEN GOTO MENU
3640 IF K=K3 THEN D=-D:GOTO 3620
3650 IF K=K4 THEN 5300
3660 IF K<>K1 AND K<>K2 THEN 3630
3670 IF K=K1 THEN K=N0:GOSUB 2910:GOSUB 2900:GOTO 4000
3680 GOSUB INITP:POSITION N2,N0:? "I'M PRINTING THE     NAVIGATION FOR"
3690 FOR X=N1 TO LEN(ID1$):ID1$(X,X)=CHR$(ASC(ID1$(X))+128):NEXT X
3700 FOR X=N1 TO LEN(ID2$):ID2$(X,X)=CHR$(ASC(ID2$(X))+128):NEXT X
3710 POSITION N8-(LEN(ID1$)+LEN(ID2$))/N2,N1:? ID1$;" TO ";ID2$:K=N2
3720 GOSUB 2920:TRAP FLT+C2:FOR X=N1 TO N18-(LEN(ID1$)+LEN(ID2$))/N2:SCR$(X,X)=" ":NEXT X
3730 LPRINT P$(N1,N7);SCR$;ID1$;" TO ";ID2$
4000 S=N0:M=N1:NO=N0:GOSUB IDI+N100:LAT1=LAT2:LNG1=LNG2:VAR1=VAR2
4010 GOSUB 2000:IF A=N5 THEN 4030
4020 Y=FACT:GOSUB N200:S=S+INT(X*N60+HALF):LAT1=LAT2:LNG1=LNG2:VAR1=VAR2:GOTO 4010
4030 IF K=N0 THEN POSITION N13,N4:? "T/DIST: ";S;" NM":GOTO FLT+ENTR
4050 OPEN #N2,N8,N0,"P":FOR X=N1 TO 17:? #N2;" ";:NEXT X:? #N2;S;" NM"
4060 FOR X=N1 TO N20+N20:? #N2;"=";:NEXT X:? #N2:D$=P$(N8)
4100 NO=NO-N1:M=N1:IF D<N0 THEN M=PEEK(ROUTE+NO)
4110 Y=N0:GOSUB 2100:LAT1=LAT2:LNG1=LNG2:VAR1=VAR2:GOSUB 4400:IF ASC(FLT$(M))=N4 THEN GOSUB 2140
4150 C=N0:Y=N1:IF D<N0 THEN Y=NO-N1:NO=N0
4160 FOR LEG=Y TO NO STEP D:M=PEEK(ROUTE+LEG):TRAP 40000
4200 IF ASC(FLT$(M))=N2 THEN C=C+N1:GOTO 4300
4210 GOSUB IDI+N200:GOSUB N200:L=INT(N60*X+HALF):S=S-L:MC=B:Z=N0
4220 IF C THEN M=PEEK(ROUTE+LEG-C*D):C=C-N1:GOSUB 300:GOTO 4220
4230 M=PEEK(ROUTE+LEG):GOSUB IDI+N200
4240 GOSUB 2400:? #K;"  DIST=";L-Z;" NM";:IF S>N0 THEN ? #K;"  REM=";S;" NM";
4250 GOSUB 4400:LAT1=LAT2:LNG1=LNG2:VAR1=VAR2
4300 NEXT LEG:IF ASC(FLT$(M))=N4 THEN GOSUB 2140
4310 S=N0:TRAP FLT:IF K=N2 THEN CLOSE #N2:D$=CHR$(N0):LPRINT :LPRINT :LPRINT :GOTO FLT
4320 POSITION N0,N6:? CHR$(DL);CHR$(DL);CHR$(DL):GOSUB 6890:GOTO FLT
4400 GOSUB 2180:GOSUB FAC:GOSUB 2960:? #K;ID2$;" ";SCR$;:IF A<>N3 THEN RETURN
4410 SCR$=STR$(VAL(FLT$(M-N7,M-N4))+FACT):SCR$=SCR$(N2)
4420 ID2$=ID$(N2):X=VAL(FLT$(M-N3,M-N1)):? #K;" ";:GOTO 2160
5000 GOSUB FLT-MENU:POSITION N14,N0:? "LOAD FLIGHT":POSITION N13,N20:? "WHICH FLIGHT?";
5010 GOSUB KEY:IF K=N27 THEN GOTO MENU
5020 IF K>N90+N6 THEN K=K-N32
5030 IF K<N60+N5 OR K>N90 THEN 5010
5040 ID1$="D:*.F ":ID1$(N6)=CHR$(K):OPEN #N3,N6,N0,ID1$:SCR$=FLT$:X=USR(IO,N3,N5,ADR(SCR$),N18):CLOSE #N3
5050 IF SCR$(N3,N7)="EMPTY" THEN 5010
5060 ? CHR$(DL):OPEN #N3,N4,N0,ID1$:X=USR(IO,N3,N7,ADR(FLT$),MAX):CLOSE #N3:GOSUB 3400
5070 POSITION N6,N20:? "THIS THE CORRECT FLIGHT Y/N?":GOSUB CHOICE:IF NO THEN 5000
5080 GOTO FLT
```

```
5300 GOSUB FLT-MENU:SCR$=ID1$:SCR$(LEN(SCR$)+N1)=ID2$:IF LEN(SCR$))N8 THEN SCR$=SCR$(N1,N8)
5310 POSITION N14-LEN(SCR$)/N2,N0:? "SAVE FLIGHT ";SCR$
5320 POSITION N13,N20:? "WHICH POSITION?":GOSUB KEY:IF K=N27 THEN GOTO FLT
5330 IF K)N90+N6 THEN K=K-N32
5340 C=K:IF K<N60+N5 OR K)N90 THEN 5320
5350 POSITION N3,N20:? "YOUR CHOICE IS POSITION";CHR$(K+N112+N16);"- Y/N?";
5360 GOSUB CHOICE:IF NO THEN ? CHR$(DL):GOTO 5320
5370 D$=SCR$:SCR$="D:*.F":SCR$(N6)=CHR$(C):SCR$(N7)=",":SCR$(N8)=D$:SCR$(LEN(SCR$)+N1)=".F"
5380 SCR$(LEN(SCR$)+N1)=CHR$(C):XIO N32,#N3,N0,N0,SCR$:SCR$(N3)=D$:SCR$(LEN(SCR$)+N1)=".F":D$=CHR$(N0)
5390 SCR$(LEN(SCR$)+N1)=CHR$(C):OPEN #N3,N12,N0,SCR$:X=USR(IO,N3,N11,ADR(FLT$),MAX):CLOSE #N3:GOTO FLT
6000 Y=N0:X=Y:GOSUB INITS:POSITION N2,N2:? "AIRNAV DATA MENU":GOSUB ENTR-N20
6030 POKE C2-N1,N200:POSITION N25,N3:? CHR$(N112+N32);" menu":POSITION N25,N4:? "1 navaids"
6040 POSITION N25,N5:? "2 airports":POSITION N25,N6:? "3 edit":POSITION N25,N7:? "4 view"
6050 GOSUB KEY:IF K=K0 THEN GOSUB 6600:GOTO MENU
6060 C=N0:IF K<K1 OR K)K4 THEN 6050
6070 A=K-K1:ON A GOTO INPUT+N100,EMENU,INPUT+C2
6100 X=N112:Y=N0:GOSUB INIT:GOSUB INITS+N10:POSITION N2,N0:? "ENTRY:"
6120 GOSUB FAC:POSITION N1,N2:? SCR$;"DATA ENTRY"
6200 IF ENTRY)=MAX THEN GOSUB LCLR:POKE C2,K0:POSITION N14,N0:? "FULL MEMORY":GOSUB 6890:GOTO INPUT
6210 POSITION N9,N0:? ENTRY+N1;"  ":MEM=INDEX+N1+N20*ENTRY
6220 GOSUB ID:IF B=N0 THEN GOTO INPUT
6230 GOSUB GID:IF X=CMP THEN 6300
6240 GOSUB 6660:GOTO INPUT+N100
6300 GOSUB 6400:ON NO GOTO 6220
6310 GOSUB 6550:GOTO INPUT+N200
6400 NO=N1:POSITION N8,N15:? "IDENTIFIER: ";ID$(N2-A)
6410 GOSUB LAT:IF B=N0 THEN POSITION N0,N15:? CHR$(DL):RETURN
6420 GOSUB GLAT:IF K THEN 6410
6430 GOSUB SCRL:POSITION N8,N15:? "LATITUDE: ";:GOSUB PRLAT
6450 GOSUB LNG:IF B=N0 THEN POSITION N0,N15:? CHR$(DL):GOSUB DSCRL:GOTO 6410
6460 GOSUB GLNG:IF K THEN 6450
6470 GOSUB SCRL:POSITION N8,N15:? "LONGITUDE: ";:GOSUB PRLNG
6480 GOSUB VAR:IF B=N0 THEN POSITION N0,N15:? CHR$(DL):GOSUB DSCRL:GOTO 6450
6490 GOSUB GVAR:GOSUB SCRL:POSITION N8,N15:? "VARIATION: ";:GOSUB PRVAR
6500 GOSUB 6560:IF  NOT NO THEN RETURN
6510 ? CHR$(DL):POSITION N0,N15:? CHR$(DL):GOSUB DSCRL:GOTO 6480
6550 GOSUB SCLR:GOSUB STORE:ENTRY=ENTRY+N1:POKE INDEX,ENTRY:RETURN
6560 POSITION N8,N20:? "IS THE DATA CORRECT Y/N?";:GOTO CHOICE
6600 IF  NOT S THEN RETURN
6630 S=N0:X=N4:SCR$="STASH":GOSUB MSG:IF ENTRY>N1 THEN X=USR(27821,ENTRY)
6640 OPEN #N2,N8,N0,"D:NAV":X=USR(IO,N2,N11,INDEX-N1,5002):CLOSE #N2:RETURN
6660 POKE C2,K0:POKE C4,K0:GOSUB SCLR:POSITION N3,N10:? "I ALREADY HAVE ";ID$(N2-A);" STORED IN WITH"
6670 POSITION N13,N14:? "THE NAV DATA!":GOTO 6890
```

```
6710 Y=GRN:X=GRN:GOSUB INIT:POSITION N3,N2:? "view  nav data"
6720 POSITION N1,N0:? "1NAV2ARP3SCROLL4PRINT 0MENU"
6730 POSITION N14,N12:? "YOUR CHOICE?";:GOSUB KEY:IF K=K0 THEN GOTO INPUT
6740 ? CHR$(DL):IF K<K1 OR K>K4 THEN 6730
6750 GOSUB LCLR:A=K-K1:ON A GOTO 6770,6900,9300
6770 GOSUB EMENU-N200:IF B=N0 THEN GOTO INPUT+C2
6780 GOSUB 6890:GOTO 6770
6800 POKE C2,N112:GOSUB FAC
6810 POSITION N16,N0:? SCR$:POSITION N8,N20:? SCR$;"IDENTIFIER?":Y=N3+A:X=N20+N8:GOSUB ENTR:IF B=N0 THEN RETURN
6820 GOSUB SCLR:GOSUB GID:MEM=X:IF X=CMP THEN 6860
6830 Y=USR(MOVE,X,ADR(ID$),N20):POSITION N8,N6:? "IDENTIFIER: ";ID$(N2-A)
6840 POSITION N8,N9:? "LATITUDE: ";:GOSUB PRLAT:POSITION N8,N12:? "LONGITUDE: ";:GOSUB PRLNG
6850 POSITION N8,N15:? "VARIATION: ";:GOSUB PRVAR:RETURN
6860 POKE C2,K0:POSITION N13,N10:? ID$(N2-A);" IS NOT IN"
6870 POSITION N13,N13:? "THE NAV DATA!":GOSUB 6890:GOTO EMENU-N200
6890 POSITION N7,N20:? "Push any key to continue-":GOSUB KEY:GOSUB SCLR:RETURN
6900 Y=GRN:X=GRN:GOSUB INIT:POKE DLIST+N7,N6:POKE DLIST+N9,N112+N22
6910 POSITION N1,N0:? "CTRL 1STOP/START SCROLL    0QUIT"
6920 POSITION N1,N2:? "scrolling nav data":FOR D=N0 TO ENTRY-N1:MEM=INDEX+N1+N20*D:POKE CH,NULL
6930 X=USR(MOVE,MEM,ADR(ID$),N20):A=ASC(ID$):IF A>N0 THEN A=N1
6940 GOSUB FAC:POSITION N4-A,N20
6950 ? ID$(N2-A);"  -  ";SCR$;:POSITION N27,N20:? "VAR ";:GOSUB PRVAR:POSITION N0,N4:? CHR$(DL)
6960 POSITION N3,N20:? "LAT ";:GOSUB PRLAT:POSITION N22,N20:? "LNG ";:GOSUB PRLNG
6970 GOSUB SCRL+N10:IF PEEK(CH)=K2 THEN POKE CH,NULL:D=ENTRY
6980 NEXT D:FOR X=N1 TO N6:POSITION NO,N20:? BL$:FOR D=N1 TO N10:NEXT D:GOSUB SCRL:NEXT X:GOTO INPUT+C2
```

```
7000 X=K0:Y=K0:GOSUB INIT:POSITION N4,N2:? "EDIT NAV DATA"
7020 POSITION N2,N0:? "1NAVAID2AIRPORT3FORMAT0MENU"
7030 POSITION N14,N12:? "YOUR CHOICE?";:GOSUB KEY:IF K=K0 THEN GOTO INPUT
7040 ? CHR$(DL):IF K<K1 OR K>K3 THEN 7030
7050 GOSUB LCLR:A=K-K1:IF K=K3 THEN GOSUB MSG-ENTR:GOTO EMENU
7060 GOSUB EMENU-N200:GOSUB LCLR:IF B=N0 THEN POKE C2,K0:GOTO 7020
7070 GOSUB FAC:POSITION N9,N2:? SCR$:BL$:POSITION N1,N0:? "1ID2LAT3LNG4VAR5DEL0EXIT"
7080 POSITION N6,N20:? "WHICH DO YOU WANT TO CHANGE?";:GOSUB KEY:IF K=K0 THEN GOTO EMENU
7090 ? CHR$(DL):IF K<K1 OR K>K4+N1 THEN GOTO EDIT
7100 K=K-K1:GOSUB LCLR:POSITION N18,N0:? ID$(N2-A):ON K GOTO 7200,7300,7400,7500
7110 GOSUB ID:IF B=N0 THEN GOTO EDIT
7120 GOSUB GID:IF X=CMP THEN 7150
7130 GOSUB 6660:GOTO EDIT-N10
7150 POSITION N20,N6:? ID$(N2-A):GOSUB STORE:GOTO EDIT
7200 GOSUB LAT:IF B=N0 THEN GOTO EDIT
7210 GOSUB GLAT:IF K THEN 7200
7220 POSITION N18,N9:GOSUB PRLAT:? BL$:GOSUB STORE:GOTO EDIT
7300 GOSUB LNG:IF B=N0 THEN GOTO EDIT
7310 GOSUB GLNG:IF K THEN 7300
7320 POSITION N19,N12:GOSUB PRLNG:? BL$(N3):GOSUB STORE:GOTO EDIT
7400 GOSUB VAR:IF B=N0 THEN GOTO EDIT
7410 GOSUB GVAR:POSITION N19,N15:GOSUB PRVAR:? BL$:GOSUB STORE:GOTO EDIT
7500 POKE C2,K0:POSITION N6,N20:? "YOU WANT TO DELETE ";ID$(N2-A);" Y/N?";
7510 GOSUB CHOICE:? CHR$(DL):IF NO THEN GOTO EDIT
7520 ENTRY=ENTRY-N1:X=USR(28017,MEM,ENTRY-(MEM-INDEX-N1)/N20):S=N1:POKE INDEX,ENTRY:GOTO EMENU
8000 X=GRN:Y=GRN:GOSUB INIT:POSITION N3,N2:? "printer codes":C=N0:POKE SCRL-N4,N112+N112:LNG$=P$:SCR$=P$(N8)
8010 GOSUB MSG-MENU:GOSUB EMENU+MENU
8020 POSITION N4,N0:? "1SAVE   2CHANGE   0MENU":POKE C2,N112:GOSUB KEY
8030 IF (K=K1 AND  NOT C) OR K=K0 THEN GOTO MENU
8040 IF K<>K1 AND K<>K2 THEN 8020
8050 POKE C2,GRN:GOSUB LCLR
8060 IF K=K1 THEN P$=LNG$:P$(N8)=SCR$:OPEN #N3,N12,N0,"D:P":X=USR(IO,N3,N11,ADR(P$),N21):CLOSE #N3:GOTO MENU
8100 POKE 752,N0:POSITION N14,N20:? "INIT";:INPUT T$:GOSUB 8160:IF LEN(T$)=N0 THEN T$=LNG$:GOTO 8130
8110 LNG$=T$:IF LEN(LNG$)<N7 THEN LNG$(LEN(LNG$)+N1)=""
8120 GOSUB MSG-MENU
8130 POKE 752,N0:POSITION N8,N20:? "DEG CHAR";:INPUT D$:GOSUB 8160:IF LEN(D$)=N0 THEN D$=SCR$:GOTO 8020
8140 SCR$=D$:IF LEN(SCR$)<N14 THEN SCR$(LEN(SCR$)+N1)=""
8150 GOSUB EMENU+MENU:GOTO 8020
8160 POKE 752,N1:C=N1:? CHR$(N20+N8);CHR$(DL):RETURN
8200 X=USR(CLEAR,SCREEN+MAX,DL,N0)
8210 POSITION N2,N6:? "PRINTER INIT: ";:FOR X=N1 TO N7:? LNG$(X,X);:IF ASC(LNG$(X))=N27 THEN ? CHR$(N27);
8220 NEXT X
8230 POSITION N4,N8:? "In decimal: ";:FOR X=N1 TO N6:? ASC(LNG$(X,X));",";:NEXT X:? ASC(LNG$(X,X)):RETURN
8300 X=USR(CLEAR,SCREEN+N520,N360,N0)
8310 POSITION N2,N12:? "DEGREE  CHAR: ";:FOR X=N1 TO N14:? SCR$(X,X);:IF ASC(SCR$(X))=N27 THEN ? CHR$(N27);
8320 NEXT X
8330 POSITION N4,N14:? "In decimal: ";:FOR X=N1 TO N6:? ASC(SCR$(X,X));",";:NEXT X:? ASC(SCR$(X,X));BL$
8340 POSITION N16,N16:FOR X=N8 TO N13:? ASC(SCR$(X,X));",";:NEXT X:? ASC(SCR$(X,X)):RETURN
```

```
9000 X=K0:Y=K0:GOSUB INITS:POSITION N3,N2:? "LAT/LNG FORMAT"
9020 POSITION N4,N7:? "0 RETURN TO MENU":POSITION N4,N9:? "1 DEGREES, MINUTES, & SECONDS"
9030 POSITION N8,N10:? "FORMAT: DD MM' SS";CHR$(SS):POSITION N13,N11:? "Example: 90 38' 47";CHR$(SS)
9040 POSITION N8,N12:? "ENTRY FORM:  DD.MMSS":POSITION N13,N13:? "Example: 90.3847"
9050 POSITION N4,N15:? "2 DEGREES, MINUTES, & TENTHS":POSITION N8,N16:? "FORMAT: DD MM.d'":POSITION N13,N16+N1
9060 ? "Example: 90 38.8'":POSITION N8,N18:? "ENTRY FORM: DD.MMd":POSITION N13,N19:? "Example: 90.388"
9100 GOSUB KEY:IF K=K0 THEN RETURN
9110 D=K-K1:IF K<>K1 AND K<>K2 THEN 9100
9120 GOSUB SCRL+N10:POSITION N2,N20
9130 ? "YOUR CHOICE IS FORMAT OPTION #";CHR$(K);" Y/N?":GOSUB CHOICE:IF NO THEN GOSUB SCLR:GOTO 9020
9140 POKE INDEX-N1,D:IF F=D OR ENTRY=N0 THEN F=D:RETURN
9200 F=D:X=N3:SCR$="FORMATT":GOSUB MSG
9210 FOR Y=N0 TO ENTRY-N1:MEM=INDEX+N1+N20*Y:X=USR(MOVE,MEM,ADR(ID$),N20)
9220 A=VAL(LAT$):GOSUB 9260:SCR$=STR$(X/FACT):GOSUB GLAT:A=VAL(LNG$):GOSUB 9260
9230 SCR$=STR$(X/FACT):GOSUB GLNG:X=USR(MOVE,ADR(ID$),MEM,N20):NEXT Y:S=N1:RETURN
9260 B=(A/N100-INT(A/N100))*N100:A=INT(A/N100)*N100:IF  NOT F THEN X=INT(B*N6/N10+HALF)+A:RETURN
9270 X=INT(B/N6+HALF)*N10:IF X<N100 THEN X=X+A:RETURN
9280 X=A+N100:IF (X/FACT-INT(X/FACT))*N100<N100 THEN RETURN
9290 X=A+FLT+ENTR:RETURN
9300 X=N4:SCR$="PRINT":GOSUB MSG:TRAP 9430:B=N1:D=INT(ENTRY/K2+0.99):GOSUB 9460
9320 C=N2:D$=P$(N8):FOR Y=N0 TO ENTRY-N1:MEM=INDEX+N1+N20*Y:IF K=K2 THEN GOSUB MSG-K2
9330 OPEN #C,N8,N0,"P":X=USR(MOVE,MEM,ADR(ID$),N20):A=ASC(ID$):IF A>N0 THEN A=N1
9350 GOSUB FAC:? #C;BL$(N4);BL$(N4+A);ID$(N2-A);"  -  ";SCR$;:A=N0:IF ABS(VAL(VAR$))<N10 THEN A=N1
9370 ? #C;BL$(N3-A);:GOSUB PRVAR:X=VAL(LAT$)/FACT:A=N0:IF X<N10 THEN A=N1
9390 ? #C;BL$(N3);BL$(N8-A-F);:GOSUB PRLAT
9400 X=VAL(LNG$)/FACT:A=N0:IF X<N100 THEN A=N1:IF X<N10 THEN A=N2
9410 ? #C;BL$(N4);BL$(N8-A-F*N2);:GOSUB PRLNG:? #C:K=K+N1:IF PEEK(CH)=N20+N8 THEN POKE CH,NULL:Y=ENTRY
9420 CLOSE #N2:NEXT Y:FOR K=K+N1 TO N60:LPRINT :NEXT K
9430 CLOSE #N2:C=N0:TRAP MENU:D$=CHR$(N0):GOTO INPUT+C2
9450 B=B+N1:FOR X=N1 TO N10:LPRINT :NEXT X
9460 LPRINT P$(N1,N7);BL$;BL$;BL$;BL$;"    NAV DATA";BL$;BL$;"  page ";B;" of ";D
9470 LPRINT :LPRINT :LPRINT BL$;BL$(N4);"FACILITY ";BL$;"VARIATION";BL$(N3);"LATITUDE";BL$;" LONGITUDE"
9480 FOR X=N1 TO N16:SCR$(X,X)="_":NEXT X:LPRINT BL$;" ";SCR$;SCR$;SCR$;SCR$:LPRINT :K=N0:RETURN
9500 GOSUB INITP:POSITION N20+X,N0:? "I AM ";SCR$;"ING":POSITION N4,N1:? "THE NAV DATA!":RETURN
```

A. The following lines have ATASCII characters that the printer does not print. The excerpts below show were these characters are located. The code numbers are in brackets.

```
850  "FORMAT:  DD[0] MM.d'
860  "FORMAT:  DD[0] MM'
2320 "[2]";CHR$(A);"[22]";
2700 SCR$(N5);"[0]"
3010 "[2]1[22]NAV [2]2[22]ARP [2]3[22]INTERSECTION":  ([2]1[22]-[2]3[22])
3110 "[2]1[22]NAV[2]2[22]ARP[2]3[22]INTERSECTION[2]4[22]WAYPOINT"
3120 ([2]1[22]-[2]4[22])
5350 POSITION[2]";CHR$(    );"[22]-
6720 "[2]1[22]NAV[2]2[22]ARP[2]3[22]SCROLL[2]4[22]PRINT [2]0[22]MENU
6910 "[2]CTRL 1[22]STOP/START    [2]0[22]QUIT"
7020 "[2]1[22]NAVAID[2]2[22]AIRPORT[2]3[22]FORMAT[2]0[22]MENU"
7070 "[2]1[22]ID[2]2[22]LAT[2]3[22]LNG[2]4[22]VAR[2]5[22]DEL[2]0[22]EXIT"
8020 [2]1[22]SAVE   [2]2[22]CHANGE   [2]0[22]MENU"
8110 LNG$(   )="[0][0][0][0][0][0]"
8140 SCR$(   )="[0][0][0][0][0][0][0][0][0][0][0][0][0]"
9020 "[2]0[22] RETURN
     "[2]1[22] DEGREES
9030 "FORMAT: DD[0] MM'
     "Example: 90[0] 38'
9050 "[2] DEGREES
     "FORMAT: DD[0] MM.d'
9060 "Example: 90[0] 38.8'
```

B. All the Y/N prompts have the "Y" and the "N" in inverse video. This occurs in the following lines:

2530, 5070, 5350, 6560, 7500, 9130

C. Some of the character strings are in inverse video. In the following lines, all the string characters in the line are inverse unless otherwise stated:

1230, 1320, 1340, 1920, 1930, 1960, 1990, 3010 (the numbers), 3110 (the numbers), 3120 (the numbers), 3680, 3710, 6630, 6720 (the numbers), 6910 ("CTRL 1" & "0"), 7020 (the numbers), 7070 (the numbers), 8020 (the numbers), 9020 (the numbers), 9050 ("2"), 9200, 9300, 9500

PERSONAL COPY CHANGES

```
100 REM AIR NAVIGATION/*RNAV* COPYRIGHT 1983 ROBERT A. TIMS 1-21-84 PERSONAL COPY
110 POKE 106,108:POKE 16,112:POKE 53774,112:GOTO 1000
1230 GOSUB INITP:POSITION N20+N4,N0:? "LOADING DATA":OPEN #N3,N4,N0,"D:NAV"
1350 TRAP MENU+K2:GET #N1,K:TRAP MENU:IF K=N27 THEN POKE 106,160:GRAPHICS N0:END
1920
1930
1960
1990
```

Character string in line 1230 is inverse video

431 Free Bytes

AIR NAVIGATION/*RNAV*

VARIABLE CROSS-REFERENCE TABLE

VARIABLE CROSS-REFERENCE TABLE

N0

200 230 270 280 480 500 550 590 650 690
720 760 770 780 790 800 830 840 870 900
930 940 1000 1200 1210 1230 1250 1300 1320 1330
1350 1540 1640 1720 1750 1920 1960 1990 2030 2100
2190 2300 2310 2430 2610 2620 2630 2640 2660 2680
2720 2760 2800 2820 2850 2900 2930 3000 3020 3050
3080 3090 3110 3150 3160 3170 3180 3210 3300 3430
3480 3670 3680 4000 4030 4050 4100 4110 4150 4210
4240 4310 4320 5000 5040 5060 5310 5380 5390 6000
6060 6100 6200 6210 6220 6410 6450 6480 6510 6630
6640 6720 6770 6810 6910 6920 6930 6950 7020 7060
7070 7100 7110 7200 7300 7400 8000 8020 8060 8100
8130 8200 8300 9140 9210 9320 9330 9350 9370 9400
9430 9480 9500

X

200 220 250 320 370 400 410 420 450 480
500 540 560 610 620 630 640 700 790 800
830 940 1200 1210 1250 1270 1410 1450 1480 1500
1600 1700 1720 1730 1740 1750 1810 1820 2170 2300
2310 2320 2500 2660 2710 2750 2910 3000 3020 3160
3170 3400 3690 3700 3720 4020 4050 4060 4210 4420
5040 5060 5390 6000 6100 6230 6630 6640 6710 6810
6820 6830 6900 6930 6980 7000 7120 7520 8000 8060
8200 8210 8220 8230 8300 8310 8320 8330 8340 9000
9200 9210 9220 9230 9260 9270 9280 9290 9300 9330
9370 9400 9450 9480 9500

LAT1

200 230 270 4000 4020 4110 4250

LAT2

200 230 270 410 420 1800 1820 1850 1870 4000
4020 4110 4250

LNG1

200 270 4000 4020 4110 4250

LNG2

200 270 420 1800 1820 1860 1880 4000 4020 4110
4250

N1

200 220 230 240 250 260 320 370 400 410
420 500 520 530 550 570 620 630 660 720
740 780 800 810 870 880 950 980 1000 1200
1250 1260 1270 1330 1350 1480 1520 1550 1620 1650
1720 1800 1910 1990 2020 2030 2100 2170 2190 2310
2520 2540 2550 2610 2630 2920 2950 2970 3050 3060
3090 3110 3160 3190 3300 3400 3480 3490 3600 3610
3690 3700 3710 3720 3730 4000 4050 4060 4100 4150
4200 4220 4420 5300 5370 5380 5390 6030 6120 6210
6400 6550 6630 6640 6720 6910 6920 6930 6980 7070
7090 7520 8110 8140 8160 8210 8230 8310 8330 9050
9140 9210 9230 9300 9320 9330 9350 9370 9400 9410
9420 9450 9460 9480 9500

B

200 230 240 250 260 270 280 300 360 410
420 450 500 540 590 630 650 680 690 700
1430 1440 1800 1810 1820 1910 2140 2630 2640 2660
2720 2800 3050 3080 3090 3180 3210 3300 3455 4210
6220 6410 6450 6480 6770 6810 7060 7110 7200 7300
7400 9260 9270 9300 9450 9460

N50

220 240 250 270 280 300 310 320 360 530
580 720 820 880 1040 1230 1930 2140 5020 5030
5330 5340

Y

220 320 330 340 360 400 410 420 500 570
580 600 630 640 800 830 850 860 870 1400
1500 1600 1700 1820 2300 2310 2320 2400 2410 2430
2440 2450 2520 2660 2710 2910 3000 3400 4020 4110
4150 4160 6000 6100 6710 6810 6830 6900 7000 8000
9000 9210 9230 9320 9410 9420

FACT

220 360 450 1060 1520 1620 1870 1880 2450 4020
4410 9220 9230 9280 9370 9400

MAX

230 1060 1150 1160 2150 2510 2530 2600 3020 3100
5060 5390 6200 8200

N360

270 280 300 1040 2140 2430 2440 8300

IDI

300 1100 1230 1930 2010 2020 2030 2050 2100 2110
2140 3440 3455 3470 4000 4210 4230

NAV

300 1100 2030 2050 2100 2110 2140

N200

300 870 1040 2050 2110 2140 2150 4020 4210 4230
6030 6310 6770 6870 7060

MEM

300 310 320 360 370 410 420 1480 2550 6210
6820 6920 6930 7520 9210 9230 9320 9330

MC

300 2400 2410 4210

N60

320 370 400 450 480 610 680 690 730 830
870 900 1040 1230 1730 1930 2670 2680 4020 4210
5030 5340 9420

HALF

320 360 370 450 1000 2400 2410 4020 4210 9260
9270

L

320 340 4210 4240

Z

330 340 4210 4240

A

340 350 600 980 1400 1420 1430 1440 2000 2010
2020 2030 2100 2110 2320 2610 2630 2780 2820 2850
3050 3060 3070 3090 3150 3160 3170 3190 3200 3300
3410 3420 3430 3440 4010 4400 6070 6400 6660 6750
6810 6830 6860 6930 6940 6950 7050 7100 7150 7500
9220 9260 9270 9280 9290 9330 9350 9370 9390 9400
9410

K

340 350 520 530 540 550 560 580 620 650
660 680 690 720 730 950 960 1350 1360 1370
1380 1520 1540 1620 1640 1720 1730 2160 2170 2180
2310 2400 2410 3020 3030 3040 3050 3130 3140 3150
3160 3630 3640 3650 3660 3670 3710 4030 4240 4310
4400 4420 5010 5020 5030 5040 5320 5330 5340 5350
6050 6060 6070 6420 6460 6730 6740 6750 7030 7040
7050 7080 7090 7100 7210 7310 8030 8040 8060 9100
9110 9130 9320 9410 9420 9480

S

340 600 1480 2710 4000 4020 4030 4050 4210 4240
4310 6600 6630 7520 9230

VARI

340 2150 2400 2410 4000 4020 4110 4250

VAR2

340 360 400 1800 1820 2140 2150 2410 4000 4020
4110 4250

N2

350 360 420 450 540 680 810 820 830 840
870 880 1000 1010 1050 1070 1090 1110 1130 1210
1270 1430 1540 1550 1640 1730 1900 2020 2180 2300
2320 2560 2620 2650 2690 2700 2740 2900 2910 2920
2930 2940 2960 3000 3160 3400 3430 3490 3680 3710
3720 4050 4060 4200 4310 4410 4420 5310 6000 6100
6120 6400 6640 6660 6710 6830 6860 6920 6950 7000
7020 7070 7100 7150 7500 8000 8210 8310 9000 9120
9320 9350 9400 9410 9420 9430

FAC

350 1100 3050 3160 3420 4400 6120 6800 6940 7070
9350

ID2$

350 1150 2100 2110 2140 2160 2610 2620 2820 2900
2920 2930 2960 2970 3060 3100 3190 3440 3450 3490
3700 3710 3720 3730 4400 4420 5300

ID$

350 1150 1160 1420 1430 1440 1450 1480 1820 1900
2560 2650 4420 6400 6660 6830 6860 6930 6950 7100
7150 7500 9210 9230 9330 9350

SCR$

350 360 450 500 640 980 1150 1230 1430 1440
1520 1530 1540 1620 1630 1640 1720 1730 1740 1920
1930 1960 1990 2170 2310 2320 2400 2410 2450 2610
2670 2680 2690 2700 2730 2740 2750 2770 3050 3060
3180 3190 3440 3450 3470 3720 3730 4400 4410 5040
5050 5300 5310 5370 5380 5390 6120 6630 6810 6950
7070 8000 8060 8130 8140 8310 8330 8340 9200 9220
9230 9300 9350 9400 9500

N10

360 370 400 450 480 520 730 810 820 900
920 1000 1600 1800 1850 1860 1870 1880 2010 2020
2170 2320 2520 2690 2740 2750 3120 3170 3440 3455
3470 6100 6660 6860 6970 6980 7130 9030 9120 9260
9270 9350 9370 9400 9450

FLT$

400 1150 1160 1800 1900 1910 2000 2100 2110 2140
2310 2540 2560 2610 2630 2690 2770 2820 3020 3060
3160 3340 3410 3440 3450 3455 3470 3480 4110 4200
4300 4410 4420 5040 5060 5390

M

400 1800 1900 1910 2000 2050 2100 2110 2140 2510
2540 2560 2600 2610 2630 2660 2690 2770 2780 2820
3050 3100 3160 3340 3400 3410 3440 3450 3455 3460
3470 4000 4100 4110 4160 4200 4220 4230 4300 4410
4420

N3

400 540 600 680 700 830 880 980 1000 1150
1230 1250 1300 1320 1330 1400 1550 1650 1700 1720
1800 1990 2100 2110 2140 2170 2300 2310 2320 2450
2520 2630 2690 2780 3000 3060 3070 3190 3200 3410
3440 3470 3480 3600 4400 4420 5040 5050 5060 5350
5380 5390 6030 6660 6710 6810 6960 7320 8000 8060
9000 9200 9370 9390 9470

N7

400 480 530 640 810 1000 1150 1250 1500 1630
1700 2050 2110 2770 3010 3460 3610 3730 4410 5050
5060 5370 6040 6890 6900 8110 8210 9020 9460

N4

400 480 540 600 760 770 780 820 1000 1150
1200 1230 1250 1360 1410 1430 1440 1530 1550 1650
1740 1800 1960 1990 2010 2110 2170 2300 2310 2610

2700 2710 2770 2820 2850 3400 3450 3480 3600 4030
4110 4300 4410 5060 6030 6630 6940 6950 7000 8000
8020 8230 8330 9020 9050 9300 9350 9410 9470 9500

DLIST
480 810 820 6900

N20
480 500 540 560 620 630 680 690 700 790
830 880 900 920 940 1000 1230 1360 1400 1410
1480 1500 1600 1700 1730 1820 1920 1960 2190 2530
2550 2660 2710 2850 4060 5000 5070 5320 5350 6000
6210 6560 6810 6830 6890 6920 6930 6940 6950 6960
6980 7080 7150 7500 7520 8100 8130 8160 9120 9210
9230 9320 9330 9410 9500

N5
480 580 820 1000 1210 1400 1530 1550 1560 1630
1650 1900 2000 2100 2140 2310 2560 2610 2660 2700
2910 3000 3340 3410 3440 3450 3470 3480 3610 4010
5030 5040 5340 6040

N21
480 650 690 720 850 1040 1150 1250 1500 1600
2540 2660 8060

N32
480 530 580 880 1040 2940 2950 2960 2970 5020
5330 5380 6030

N22
480 660 690 1040 1330 1990 2510 2540 2710 6900
6960

N100
480 500 600 720 730 790 820 950 1040 1520
1850 1860 2010 2020 2730 2740 3340 4000 6070 6240
9260 9270 9280 9400

N9
480 500 690 820 950 1000 1730 2820 6210 6840
6900 7070 7220 9020

BL$
500 1150 1160 1420 1520 1620 1720 3450 6980 7070
7220 7320 7410 8330 9350 9370 9390 9410 9460 9470
9480

D
500 540 550 560 570 590 620 630 650 680
700 1210 1270 2930 3490 3640 4100 4150 4160 4220
6920 6970 6980 9110 9140 9200 9300 9460

N14
500 540 560 1000 1150 2800 3120 3170 5000 5310
6200 6670 6730 7030 8100 8140 8310 8330

N520
520 530 560 620 670 690 1040 1920 1930 8300

MENU
520 950 1100 1350 1370 1740 3020 3630 5000 5010
5300 6050 8010 8030 8060 8120 8150 9430

DL
520 640 760 770 780 800 880 1080 2190 2720
2760 2850 3040 3480 4320 5060 5360 6410 6450 6480
6510 6740 6950 7040 7090 7510 8160 8200

N620
520 610 650 660 680 700 710 790 1040

BS
530 540 550 560 880 1080

N27
540 610 680 690 1040 1350 1700 3020 3130 5010
5320 6950 8210 8310

ENTR
570 820 1100 1300 1410 1500 1600 1700 2660 2710
4030 6000 6810 7050 9290

N6
580 640 810 1000 1150 1270 1530 1630 1650 1660

1850 1860 1870 1880 1910 2050 2110 2190 2300 2500
2530 2540 2550 2610 2630 2670 2680 2770 2780 3100
3455 3480 3610 4320 5020 5040 5070 5330 5370 6040
6830 6900 6980 7080 7150 7500 8210 8230 8330 9260
9270
IO
640 1060 1250 2310 5040 5060 5390 6640 8060
N25
650 660 690 1040 1730 3600 3610 6030 6040
N59
660 1040 1530 1630
KEY
720 950 1100 1990 3020 3130 3630 5010 5320 6050
6730 6890 7030 7080 8020 9100
NO
720 740 1920 2000 2020 2520 2540 2550 2760 3500
4000 4100 4150 4160 5070 5360 6300 6400 6500 6980
7510 9130
N18
730 880 1000 1150 2310 2540 2900 3720 5040 7100
7220 9060
CHOICE
730 1100 1920 2530 5070 5360 6560 7510 9130
CLEAR
790 830 870 940 1060 1200 3020 8200 8300
SCREEN
790 820 830 940 8200 8300
N16
800 1000 1800 1910 5350 6810 8340 9050 9480
N112
800 880 1040 1360 2300 2710 3040 3150 3300 5350
6030 6100 6800 6900 8000 8020
C2
800 870 1080 1920 1930 2320 3040 3110 3150 3300
3720 6030 6070 6200 6660 6770 6800 6860 6980 7060
7500 8020 8050 9430
C4
800 870 1080 2320 6660
SDLSTL
810 880 1060
N128
810 820 960 1040
N8
810 820 900 1000 1150 1600 2850 3710 4050 4060
5300 5370 6400 6430 6470 6490 6560 6640 6810 6830
6840 6850 8000 8060 8130 8160 8230 8340 9030 9040
9050 9060 9320 9330 9390 9410
N12
820 870 1000 1400 2540 2800 3010 3050 3120 5390
6730 6840 7030 7320 8060 8310 9040
N13
820 1000 1150 2310 2320 2650 2660 2700 2710 2750
3150 4030 5000 5320 6670 6860 6870 8340 9030 9040
9050 9060
GRN
830 1080 2320 6710 6900 8000 8050
INIT
840 1100 2300 2910 3000 3400 6100 6710 6900 7000
8000
ENTRY
840 1260 1300 1450 2530 2550 6200 6210 6550 6630
6920 6970 7520 9140 9210 9300 9320 9410
F
850 1260 1500 1530 1550 1560 1600 1630 1650 1660
1850 1860 9140 9200 9260 9390 9410
N19

860 1000 2540 2600 7320 7410 9060
SS
860 1080 1550 1560 1650 1660 9030
K2
870 1080 1350 1370 3150 3660 6970 8040 9110 9300
9320
TEXT
870 1060 1200
N11
1000 1500 1800 2540 2620 3120 5390 6640 8060 9030
N15
1000 2650 2700 2720 2750 2760 6400 6410 6430 6450
6470 6480 6490 6510 6850 7410 9050
CMP
1060 1450 1810 2500 6230 6820 7120
MOVE
1060 1270 1480 1820 6830 6930 9210 9230 9330
INDEX
1060 1250 1260 2550 6210 6550 6640 6920 7520 9140
9210 9320
K0
1080 1380 3630 6050 6200 6660 6730 6860 7000 7030
7060 7080 7500 8030 9000 9100
K1
1080 1370 3030 3050 3140 3160 3660 3670 6060 6070
6740 6750 7040 7050 7090 7100 8030 8040 8060 9110
K3
1080 1370 3030 3040 3150 3640 7040 7050
K4
1080 3040 3140 3150 3650 6060 6740 7090
PUR
1080 2910 3000 3110 3400
CH
1080 6920 6970 9410
NULL
1080 6920 6970 9410
INITS
1100 2520 6000 6100 9000
INITP
1100 1320 1920 1960 1990 3680 9500
SCRL
1100 2700 2750 6430 6470 6490 6970 6980 8000 9120
DSCRL
1100 2720 2760 6450 6480 6510
SCLR
1100 2520 2560 2660 2770 2780 3110 3190 3300 6550
6660 6820 6890 9130
LCLR
1100 2620 2820 3050 3150 3490 6200 6750 7050 7060
7100 8050
FLT
1100 3340 3720 4030 4310 4320 5000 5080 5300 5320
5390 9290
ID
1120 2630 2820 3050 3180 6220 7110
GID
1120 2500 6230 6820 7120
LAT
1120 6410 7200
GLAT
1120 6420 7210 9220
PRLAT
1120 6430 6840 6960 7220 9390
LNG
1120 6450 7300
GLNG

```
     1120   6460   7310   9230
PRLNG
     1120   6470   6840   6960   7320   9410
VAR
     1120   6480   7400
GVAR
     1120   6490   7410
PRVAR
     1120   6490   6850   6950   7410   9370
STORE
     1120   6550   7150   7220   7320   7410
INPUT
     1120   1380   2690   6070   6200   6220   6240   6310   6730   6770
     6980   7030   9430
EMENU
     1120   6070   6770   6870   7050   7060   7080   7520   8010   8150
EDIT
     1120   7090   7110   7130   7150   7200   7220   7300   7320   7400
     7410   7510
MSG
     1120   1300   6630   7050   8010   8120   9200   9300   9320
LAT$
     1150   1160   1520   1540   1550   1560   1820   2540   9220   9370
LNG$
     1150   1160   1620   1640   1650   1660   1820   2540   8000   8060
     8100   8110   8210   8230   9220   9400
VAR$
     1150   1160   1720   1740   1750   1820   2540   9350
ID1$
     1150   2900   2920   2930   2940   2950   3100   3120   3480   3490
     3690   3710   3720   3730   5040   5060   5300
T$
     1150   2920   2930   3490   8100   8110
P$
     1150   1160   1250   3730   4060   8000   8060   9320   9460
D$
     1150   1300   1550   1650   1750   2170   2400   2410   4060   4310
     5370   5380   8130   8140   9320   9430
C
     1550   1560   1650   1660   1750   1760   2310   2500   2540   2550
     2560   2660   4150   4200   4220   5340   5370   5380   5390   6060
     8000   8030   8160   9320   9330   9350   9370   9390   9410   9430
LEG
     4160   4220   4230   4300
ROUTE
     1060   2000   4100   4160   4220   4230

128 VARIABLES USED
```

AIR NAVIGATION/*RNAV*

AUTORUN SOURCE CODE

```
0000        0100        .TITLE "AIR NAVIGATION/*RNAV* AUTORUN.SRC  copyright 1983 ROBERT A. TIMS"
            0110 ; JANUARY 21, 1984
            0120 ;
006A        0130 RAMTOP =    106
009B        0140 EOL    =    155
02C8        0150 COLOR0 =    712
02C4        0160 COLOR1 =    708
02C5        0170 COLOR2 =    709
02C6        0180 COLOR3 =    710
0040        0190 IOCB   =    64
0342        0200 ICCMD  =    834
0344        0210 ICBAL  =    836
0345        0220 ICBAH  =    837
0348        0230 ICBLL  =    840
0349        0240 ICBLH  =    841
034A        0250 ICAX1  =    842
0003        0260 OPEN   =    3
000C        0270 CLOSE  =    12
0007        0280 GET    =    7
0004        0290 READ   =    4
E456        0300 CIOV   =    58454
0230        0310 DLIST  =    560
6C5A        0320 SORT   =    27738
0303        0330 STATUS =    771
8126        0340 PIX    =    33062
            0350 ;
0000        0360        *=   $5000
            0370 ;
5000 44     0380        .BYTE "D:AIRCRAFT.PIX",EOL
5001 3A
5002 41
5003 49
5004 52
5005 43
5006 52
5007 41
5008 46
5009 54
500A 2E
500B 50
500C 49
500D 58
500E 9B
500F 53     0390        .BYTE "S",EOL
5010 9B
5011 44     0400        .BYTE "D:SORT",EOL
5012 3A
5013 53
5014 4F
5015 52
5016 54
```

AIR NAVIGATION/*RNAV* AUTORUN.SRC copyright 1983 ROBERT A. TIMS

```
5017 9B
5018 44     0410        .BYTE "D:RNAVML",EOL
5019 3A
501A 52
501B 4E
501C 41
501D 56
501E 4D
501F 4C
5020 9B
5021 A96C   0420        LDA  #108      ; SET RAMTOP TO PAGE 108
5023 856A   0430        STA  106
5025 A240   0440        LDX  #IOCB
5027 A903   0450        LDA  #OPEN     ; OPEN SCREEN TO GR.0 TO RESET DLIST BELOW RAMTOP
5029 9D4203 0460        STA  ICCMD,X
502C A904   0470        LDA  #READ
502E 9D4A03 0480        STA  ICAX1,X
5031 A900   0490        LDA  #0
5033 9D4B03 0500        STA  ICAX1+1,X
5036 A90F   0510        LDA  #$0F
5038 9D4403 0520        STA  ICBAL,X
503B A950   0530        LDA  #$50
503D 9D4503 0540        STA  ICBAH,X
5040 2056E4 0550        JSR  CIOV
5043 A90C   0560        LDA  #CLOSE
5045 9D4203 0570        STA  ICCMD,X
5048 2056E4 0580        JSR  CIOV
504B A900   0590        LDA  #0
504D 8DF302 0600        STA  755       ; TURN CURSOR OFF
5050 A996   0610        LDA  #150      ; BLUE
5052 8DC802 0620        STA  COLOR0
5055 8DC602 0630        STA  COLOR3
5058 A9F0   0640        LDA  #PIX+202&255 ; CLEAR THE PICTURE AREA
505A 85CB   0650        STA  $CB
505C A981   0660        LDA  #PIX+202/256
505E 85CC   0670        STA  $CC
5060 A91E   0680        LDA  #7680/256
5062 85CF   0690        STA  $CF
5064 A000   0700        LDY  #7680&255
5066 A900   0710        LDA  #0
5068 A200   0720        LDX  #0
506A C000   0730 CLOOP  CPY  #0
506C D004   0740        BNE  CLEAR
506E C6CF   0750        DEC  $CF
5070 300A   0760        BMI  CONT
5072 88     0770 CLEAR  DEY
5073 91CB   0780        STA  ($CB),Y
5075 E8     0790        INX
5076 D0F2   0800        BNE  CLOOP
5078 E6CC   0810        INC  $CC
507A D0EE   0820        BNE  CLOOP
            0830 ;
```

AIR NAVIGATION/*RNAV* AUTORUN.SRC copyright 1983 ROBERT A. TIMS

```
507C A240   0840 CONT   LDX  #IOCB
507E A903   0850        LDA  #OPEN     ; OPEN AIRCRAFT.PIX FILE
5080 9D4203 0860        STA  ICCMD,X
5083 A900   0870        LDA  #0
5085 9D4403 0880        STA  ICBAL,X
5088 A950   0890        LDA  #$50
508A 9D4503 0900        STA  ICBAH,X
508D A904   0910        LDA  #READ
508F 9D4A03 0920        STA  ICAX1,X
5092 2056E4 0930        JSR  CIOV
5095 3053   0940        BMI  SKIP
            0950 ;
5097 A926   0960        LDA  #PIX&255  ; LOAD THE DLIST
5099 9D4403 0970        STA  ICBAL,X
509C A981   0980        LDA  #PIX/256
509E 9D4503 0990        STA  ICBAH,X
50A1 A907   1000        LDA  #GET
50A3 9D4203 1010        STA  ICCMD,X
50A6 A9CA   1020        LDA  #202
50A8 9D4803 1030        STA  ICBLL,X
50AB A900   1040        LDA  #0
50AD 9D4903 1050        STA  ICBLH,X
50B0 2056E4 1060        JSR  CIOV
50B3 3035   1070        BMI  SKIP
            1080 ;
50B5 A90C   1090        LDA  #12       ;SET COLORS (BLUE -150- HAS BEEN STORED IN COLOR0)
50B7 8DC402 1100        STA  COLOR1
50BA A932   1110        LDA  #50
50BC 8DC502 1120        STA  COLOR2
50BF A900   1130        LDA  #0
50C1 8DC602 1140        STA  COLOR3
            1150 ;
50C4 A926   1160        LDA  #PIX&255  ; LOAD THE PICTURE FILE
50C6 8D3002 1170        STA  DLIST
50C9 A981   1180        LDA  #PIX/256
50CB 8D3102 1190        STA  DLIST+1
50CE A9F0   1200        LDA  #PIX+202&255
50D0 9D4403 1210        STA  ICBAL,X
50D3 A981   1220        LDA  #PIX+202/256
50D5 9D4503 1230        STA  ICBAH,X
50D8 A907   1240        LDA  #GET
50DA 9D4203 1250        STA  ICCMD,X
50DD A900   1260        LDA  #7680&255
50DF 9D4803 1270        STA  ICBLL,X
50E2 A91E   1280        LDA  #7680/256
50E4 9D4903 1290        STA  ICBLH,X
50E7 2056E4 1300        JSR  CIOV
50EA 3021   1310 SKIP   BMI  SKIP1
50EC A90C   1320        LDA  #CLOSE
50EE 9D4203 1330        STA  ICCMD,X
50F1 2056E4 1340        JSR  CIOV
            1350 ;
```

AIR NAVIGATION/*RNAV* AUTORUN.SRC copyright 1983 ROBERT A. TIMS

```
50F4 A240   1360        LDX  #IOCB
50F6 A903   1370        LDA  #OPEN     ; OPEN SORT FILE
50F8 9D4203 1380        STA  ICCMD,X
50FB A911   1390        LDA  #$11
50FD 9D4403 1400        STA  ICBAL,X
5100 A950   1410        LDA  #$50
5102 9D4503 1420        STA  ICBAH,X
5105 A904   1430        LDA  #READ
5107 9D4A03 1440        STA  ICAX1,X
510A 2056E4 1450        JSR  CIOV
510D 305F   1460 SKIP1  BMI  ERROR
510F A907   1470        LDA  #GET
5111 9D4203 1480        STA  ICCMD,X
5114 A95A   1490        LDA  #SORT&255
5116 9D4403 1500        STA  ICBAL,X
5119 A96C   1510        LDA  #SORT/256
511B 9D4503 1520        STA  ICBAH,X
511E A942   1530        LDA  #322&255
5120 9D4803 1540        STA  ICBLL,X
5123 A901   1550        LDA  #322/256
5125 9D4903 1560        STA  ICBLH,X
5128 2056E4 1570        JSR  CIOV
512B 3041   1580        BMI  ERROR
512D A90C   1590        LDA  #CLOSE
512F 9D4203 1600        STA  ICCMD,X
5132 2056E4 1610        JSR  CIOV
            1620 ;
5135 A240   1630        LDX  #IOCB
5137 A903   1640        LDA  #OPEN     ; OPEN RNAVML FILE
5139 9D4203 1650        STA  ICCMD,X
513C A918   1660        LDA  #$18
513E 9D4403 1670        STA  ICBAL,X
5141 A950   1680        LDA  #$50
5143 9D4503 1690        STA  ICBAH,X
5146 A904   1700        LDA  #READ
5148 9D4A03 1710        STA  ICAX1,X
514B 2056E4 1720        JSR  CIOV
514E 301E   1730        BMI  ERROR
5150 A907   1740        LDA  #GET
5152 9D4203 1750        STA  ICCMD,X
5155 A980   1760        LDA  #$80
5157 9D4403 1770        STA  ICBAL,X
515A A906   1780        LDA  #$6
515C 9D4503 1790        STA  ICBAH,X
515F A976   1800        LDA  #118&255
5161 9D4803 1810        STA  ICBLL,X
5164 A900   1820        LDA  #118/256
5166 9D4903 1830        STA  ICBLH,X
5169 2056E4 1840        JSR  CIOV
516C 1001   1850        BPL  RUN
516E 60     1860 ERROR  RTS
516F A90C   1870 RUN    LDA  #CLOSE
```

```
5171 9D4203 1880        STA  ICCMD,X
5174 2056E4 1890        JSR  CIOV
            1900 ;
5177 A200   1910        LDX  #0         ; RUN THE BASIC RNAV PROGRAM
031A        1920 HATABS =    $031A
5179 BD1A03 1930 SEARCH LDA  HATABS,X  ; FIND EDITOR HANDLER IN HANDLER TABLE
517C C945   1940        CMP  #$45
517E F005   1950        BEQ  SAVE
5180 E8     1960        INX
5181 E8     1970        INX
5182 E8     1980        INX
5183 D0F4   1990        BNE  SEARCH
5185 E8     2000 SAVE   INX             ;SAVE THE EDITOR HANDLER VECTOR TABLE ADDRESS
5186 86CC   2010        STX  $CC        ; AND SAVE THE POINTER
5188 BD1A03 2020        LDA  HATABS,X
518B 85CD   2030        STA  $CD
518D A9E5   2040        LDA  #TEMPTAB&255
518F 9D1A03 2050        STA  HATABS,X
5192 E8     2060        INX
5193 BD1A03 2070        LDA  HATABS,X
5196 85CE   2080        STA  $CE
5198 A951   2090        LDA  #TEMPTAB/256
519A 9D1A03 2100        STA  HATABS,X
519D A000   2110        LDY  #0         ; BUILD THE TEMPORARY TABLE
519F A20A   2120        LDX  #10
51A1 B1CD   2130 BUILD  LDA  ($CD),Y
51A3 99E551 2140        STA  TEMPTAB,Y
51A6 C8     2150        INY
51A7 CA     2160        DEX
51A8 D0F7   2170        BNE  BUILD
51AA A9B8   2180        LDA  #TEMPGET-1&255
51AC 8DE951 2190        STA  TEMPTAB+4
51AF A951   2200        LDA  #TEMPGET-1/256
51B1 8DEA51 2210        STA  TEMPTAB+5
51B4 A90A   2220        LDA  #END-LIST+1
51B6 85CB   2230        STA  $CB
51B8 60     2240        RTS
51B9 A4CB   2250 TEMPGET LDY $CB        ; THE TEMPORARY GET ROUTINE
51BB F008   2260        BEQ  RESTORE
51BD B9DA51 2270        LDA  LIST-1,Y
51C0 C6CB   2280        DEC  $CB
51C2 A001   2290        LDY  #1
51C4 60     2300        RTS
51C5 8A     2310 RESTORE TXA
51C6 48     2320        PHA
51C7 A6CC   2330        LDX  $CC
51C9 A5CD   2340        LDA  $CD
51CB 9D1A03 2350        STA  HATABS,X
51CE E8     2360        INX
51CF A5CE   2370        LDA  $CE
51D1 9D1A03 2380        STA  HATABS,X
51D4 68     2390        PLA
```

```
51D5 AA     2400        TAX
51D6 A99B   2410        LDA  #$9B
51D8 A001   2420        LDY  #1
51DA 60     2430        RTS
51DB 56     2440 LIST   .BYTE "VANR:D" ; D:RNAV
51DC 41
51DD 4E
51DE 52
51DF 3A
51E0 44
51E1 22     2450        .BYTE $22
51E2 4E     2460        .BYTE "NU"
51E3 55
51E4 52     2470 END    .BYTE "R"
51E5 00     2480 TEMPTAB BRK
```

AIR NAVIGATION/*RNAV*

SORT FILE SOURCE CODE

DISPLAY LIST

SEARCH ROUTINE

SORT ROUTINE

DELETE ROUTINE

```
0000        0100        .TITLE "AIR NAVIGATION/*RNAV* SORT.SRC  copyright 1983 ROBERT A. TIMS"
            0110 ; JANUARY 21, 1984
            0120 ; LENGTH IS 322 BYTES
            0130 ; USUABLE MEMORY STARTS AT $6C40
            0140 ; MAX LENGTH IS 349 BYTES
            0150 ;
            0160 ;
            0170 ; DISPLAY LIST INTERRUPT TO CHANGE SCREEN AND BACKGR COLOR TO BLUE
            0180 ;
6C5A        0190 DLI    =    27738
0000        0200        *=   DLI
            0210 ;
6C5A 48     0220        PHA
6C5B 8A     0230        TXA
6C5C 48     0240        PHA
6C5D A970   0250        LDA  #112
6C5F 454F   0260        EOR  $4F        ; ATTRACT MODE
6C61 254E   0270        AND  $4E
6C63 8D0AD4 0280        STA  $D40A
6C66 8D18D0 0290        STA  $D018
6C69 8D1AD0 0300        STA  $D01A
6C6C 68     0310        PLA
6C6D AA     0320        TAX
6C6E 68     0330        PLA
6C6F 40     0340        RTI
            0350 ;
            0360 ;
            0370 ; SUBROUTINE TO COMPARE THE ID$ WITH THE ID'S IN THE RNAV DATA BANK
            0380 ; USR(CMP,ADR(ID$),ENTRY)
6C70        0390 CMP    =    27760
            0400 ;
6C70 68     0410        PLA
6C71 68     0420        PLA
6C72 85CC   0430        STA  $CC        ; HI BYTE OF ID$
6C74 68     0440        PLA
6C75 85CB   0450        STA  $CB        ; LO BYTE OF ID$
6C77 68     0460        PLA
6C78 68     0470        PLA
6C79 F020   0480        BEQ  RTN
6C7B 85CD   0490        STA  $CD        ; NUMBER OF ENTRIES TO COMPARE
6C7D A99E   0500        LDA  #158       ; LO BYTE OF DATA BANK
6C7F 85CE   0510        STA  $CE
6C81 A96D   0520        LDA  #109       ; HI BYTE OF DATA BANK
6C83 85CF   0530        STA  $CF
6C85 A204   0540 START  LDX  #4
6C87 A000   0550        LDY  #0
6C89 B1CB   0560 COMPARE LDA ($CB),Y
6C8B D1CE   0570        CMP  ($CE),Y
6C8D D00D   0580        BNE  INC
6C8F C8     0590        INY             ; SO FAR IT IS THE SAME
6C90 CA     0600        DEX
```

```
6C91 D0F6   0610        BNE  COMPARE
6C93 A5CE   0620        LDA  $CE       ; A MATCH IS MADE, RETURN MEMORY LOCATION
6C95 85D4   0630        STA  $D4
6C97 A5CF   0640        LDA  $CF
6C99 85D5   0650        STA  $D5
6C9B 60     0660 RTN    RTS
6C9C C6CD   0670 INC    DEC  $CD       ; IT WASN'T A MATCH
6C9E F0FB   0680        BEQ  RTN       ; OUT OF ENTRIES TO COMPARE
6CA0 18     0690        CLC            ; MORE ENTRIES, SO INCREMENT MEMORY LOCATION
6CA1 A5CE   0700        LDA  $CE
6CA3 6914   0710        ADC  #20
6CA5 85CE   0720        STA  $CE
6CA7 90DC   0730        BCC  START
6CA9 E6CF   0740        INC  $CF
6CAB D0D8   0750        BNE  START
            0760 ;
            0770 ;
            0780 ; USR(SORT,ENTRY) WHERE ENTRY IS THE NUMBER OF ENTRIES
            0790 ;
6D9E        0800 DATA   =    28062
6CAD        0810 SORT   =    27821
            0820 ;
6CAD 68     0830        PLA
6CAE 68     0840        PLA
6CAF 68     0850        PLA            ; ENTRIES
6CB0 85CD   0860        STA  $CD
6CB2 C6CD   0870        DEC  $CD
            0880 ;
            0890 ; START OF EACH SORT PASS FOR THE FIRST CHARACTER
            0900 ;
6CB4 20286D 0910 PASS   JSR  INIT
6CB7 48     0920        PHA
6CB8 A000   0930 CHECK  LDY  #0
6CBA B1CB   0940        LDA  ($CB),Y
6CBC A014   0950        LDY  #20
6CBE D1CB   0960        CMP  ($CB),Y
6CC0 F007   0970        BEQ  INC1
6CC2 3005   0980        BMI  INC1
6CC4 68     0990        PLA
6CC5 08     1000        PHP
6CC6 20546D 1010        JSR  SWITCH
6CC9 20356D 1020 INC1   JSR  ADD1
6CCC D0EA   1030        BNE  CHECK
6CCE 68     1040        PLA
6CCF D0E3   1050        BNE  PASS
            1060 ;
            1070 ; START OF EACH SORT PASS FOR THE MAIN THREE CHARACTERS
            1080 ;
6CD1 20286D 1090 PASS2  JSR  INIT
6CD4 48     1100        PHA
6CD5 A001   1110 CHECK1 LDY  #1
6CD7 B1CB   1120        LDA  ($CB),Y
```

```
6CD9 A015   1130        LDY  #21
6CDB D1CB   1140        CMP  ($CB),Y
6CDD 301F   1150        BMI  INC2
6CDF D018   1160        BNE  JUMP
6CE1 A002   1170        LDY  #2
6CE3 B1CB   1180        LDA  ($CB),Y
6CE5 A016   1190        LDY  #22
6CE7 D1CB   1200        CMP  ($CB),Y
6CE9 3013   1210        BMI  INC2
6CEB D00C   1220        BNE  JUMP
6CED A003   1230        LDY  #3
6CEF B1CB   1240        LDA  ($CB),Y
6CF1 A017   1250        LDY  #23
6CF3 D1CB   1260        CMP  ($CB),Y
6CF5 F007   1270        BEQ  INC2
6CF7 3005   1280        BMI  INC2
6CF9 68     1290 JUMP   PLA
6CFA 08     1300        PHP
6CFB 20546D 1310        JSR  SWITCH
6CFE 20356D 1320 INC2   JSR  ADD1
6D01 D0D2   1330        BNE  CHECK1
6D03 68     1340        PLA
6D04 D0CB   1350        BNE  PASS2
6D06 20286D 1360 SHIFT  JSR  INIT      ; SHIFT THE NUMBER ID'S BELOW THE ALPHA ID'S
6D09 AD9F6D 1370        LDA  DATA+1
6D0C C940   1380        CMP  #64
6D0E 1060   1390        BPL  END
6D10 A013   1400        LDY  #19       ; PUSH DATA ON THE STACK
6D12 B1CB   1410 LOOP4  LDA  ($CB),Y
6D14 48     1420        PHA
6D15 88     1430        DEY
6D16 10FA   1440        BPL  LOOP4
6D18 207D6D 1450        JSR  MOVE
6D1B A000   1460        LDY  #0        ; PULL DATA FROM THE STACK
6D1D 68     1470 LOOP5  PLA
6D1E 91CE   1480        STA  ($CE),Y
6D20 C8     1490        INY
6D21 C014   1500        CPY  #20
6D23 D0F8   1510        BNE  LOOP5
6D25 4C066D 1520        JMP  SHIFT
            1530 ;
            1540 ; SUBROUTINE TO INITIALIZE THE MEMORY INDEX
            1550 ;
6D28 A99E   1560 INIT   LDA  #DATA&255
6D2A 85CB   1570        STA  $CB
6D2C A96D   1580        LDA  #DATA/256
6D2E 85CC   1590        STA  $CC
6D30 A6CD   1600        LDX  $CD
6D32 A900   1610        LDA  #0
6D34 60     1620        RTS
            1630 ;
            1640 ; SUBROUTINES TO INCREMENT MEMORY INDEX
```

```
                1650 ;
6D35 18         1660 ADD1   CLC
6D36 A5CB       1670        LDA  $CB
6D38 6914       1680        ADC  #20
6D3A 85CB       1690        STA  $CB
6D3C 9002       1700        BCC  CONT1
6D3E E6CC       1710        INC  $CC
6D40 CA         1720 CONT1  DEX
6D41 60         1730        RTS
6D42 18         1740 ADD2   CLC
6D43 A5CB       1750        LDA  $CB
6D45 6914       1760        ADC  #20
6D47 85CE       1770        STA  $CE
6D49 A5CC       1780        LDA  $CC
6D4B 85CF       1790        STA  $CF
6D4D 9002       1800        BCC  CONT2
6D4F E6CF       1810        INC  $CF
6D51 A013       1820 CONT2  LDY  #19
6D53 60         1830        RTS
                1840 ;
                1850 ; SUBROUTINE TO SWITCH DATA
                1860 ;
6D54 20426D     1870 SWITCH JSR  ADD2
6D57 B1CB       1880 LOOP1  LDA  ($CB),Y   ; PUSH DATA ON THE STACK
6D59 48         1890        PHA
6D5A 88         1900        DEY
6D5B 10FA       1910        BPL  LOOP1
6D5D A013       1920        LDY  #19
6D5F B1CE       1930 LOOP2  LDA  ($CE),Y
6D61 91CB       1940        STA  ($CB),Y
6D63 88         1950        DEY
6D64 10F9       1960        BPL  LOOP2
6D66 A000       1970        LDY  #0
6D68 68         1980 LOOP3  PLA            ; PULL DATA FROM THE STACK
6D69 91CE       1990        STA  ($CE),Y
6D6B C8         2000        INY
6D6C C014       2010        CPY  #20
6D6E D0F8       2020        BNE  LOOP3
6D70 60         2030 END    RTS
                2040 ;
                2050 ;
                2060 ; DELETE SUBROUTINE
                2070 ; USR(DELETE,MEM,NUMBER) WHERE MEM IS THE STARTING LOCATION OF THE FIELD TO BE DELETED.
                2080 ; AND THE NUMBER IS ENTRY-(MEM-INDEX-N1)/20 AFTER ENTRY HAS BEEN DECREMENTED.
                2090 ;
6D71            2100 DELETE =    28017
                2110 ;
6D71 68         2120        PLA
6D72 68         2130        PLA
6D73 85CC       2140        STA  $CC       ; HI MEM BYTE
6D75 68         2150        PLA
6D76 85CB       2160        STA  $CB       ; LO MEM BYTE
```

```
6D78 68     2170        PLA
6D79 68     2180        PLA
6D7A F016   2190        BEQ  LAST
6D7C AA     2200        TAX             ; ENTRY NUMBER (LESS THAN 250)
6D7D 20426D 2210 MOVE   JSR  ADD2
6D80 B1CE   2220 LOOP   LDA  ($CE),Y
6D82 91CB   2230        STA  ($CB),Y
6D84 88     2240        DEY
6D85 10F9   2250        BPL  LOOP
6D87 A5CE   2260        LDA  $CE
6D89 85CB   2270        STA  $CB
6D8B A5CF   2280        LDA  $CF
6D8D 85CC   2290        STA  $CC
6D8F CA     2300        DEX
6D90 D0EB   2310        BNE  MOVE
6D92 A013   2320 LAST   LDY  #19
6D94 A9FF   2330 FILL   LDA  #$FF
6D96 91CB   2340        STA  ($CB),Y
6D98 88     2350        DEY
6D99 10F9   2360        BPL  FILL
6D9B 60     2370        RTS
6D9C        2380        .END
```

AIR NAVIGATION/*RNAV*

MACHINE LANGUAGE SUBROUTINES

CLEAR MEMORY BLOCK

MOVE MEMORY BLOCK

BLOCK INPUT/OUPUT

```
0000        0100        .TITLE "AIR NAVIGATION/*RNAV* RNAVML.SRC  copyright 1983 ROBERT A. TIMS"
            0110 ; SOURCE CODE FOR THE MACHINE LANGUAGE SUBROUTINES IN THE RNAV PROGRAM
            0120 ; JANUARY 21, 1984
            0130 ; LENGTH IS 118 BYTES
            0140 ; USUABLE MEMORY IS $680-$6FF (128 BYTES)
            0150 ;
            0160 ;
0000        0170        *=   $680
            0180 ;
            0190 ; SUBROUTINE TO CLEAR MEMORY WITH ANY CHARACTER
            0200 ; USR(CLEAR,ADR,LEN,CHR)
0680        0210 CLEAR  =    1664
            0220 ;
0680 68     0230        PLA
0681 68     0240        PLA
0682 85CC   0250        STA  $CC       ; HI BYTE OF ADR
0684 68     0260        PLA
0685 85CB   0270        STA  $CB       ; LO BYTE OF ADR
0687 68     0280        PLA
0688 85CF   0290        STA  $CF       ; HI BYTE OF LENGTH
068A 68     0300        PLA
068B A8     0310        TAY
068C 68     0320        PLA
068D 68     0330        PLA            ; CHARACTER FOR MEMORY CLEAR
068E A200   0340        LDX  #0
0690 C000   0350 CLOOP  CPY  #0
0692 D004   0360        BNE  CONT
0694 C6CF   0370        DEC  $CF       ; DECREMENT HI BYTE OF LENGTH
0696 305D   0380        BMI  END
0698 88     0390 CONT   DEY
0699 91CB   0400        STA  ($CB),Y
069B E8     0410        INX
069C D0F2   0420        BNE  CLOOP
069E E6CC   0430        INC  $CC       ; INCREMENT HI BYTE OF ADR
06A0 D0EE   0440        BNE  CLOOP
            0450 ;
            0460 ; SUBROUTINE TO MOVE MEMORY
            0470 ; USR(MOVE,FRADR,TOADR,LEN)
06A2        0480 MOVE   =    1698
            0490 ;
06A2 68     0500        PLA
06A3 68     0510        PLA
06A4 85CC   0520        STA  $CC       ; HI BYTE OF FRADR
06A6 68     0530        PLA
06A7 85CB   0540        STA  $CB       ; LO BYTE OF FRADR
06A9 68     0550        PLA
06AA 85CE   0560        STA  $CE       ; HI BYTE OF TOADR
06AC 68     0570        PLA
06AD 85CD   0580        STA  $CD       ; LO BYTE OF TOADR
06AF 68     0590        PLA
06B0 85CF   0600        STA  $CF       ; HI BYTE OF LENGTH
```

```
06B2 68     0610        PLA
06B3 A8     0620        TAY
06B4 A200   0630        LDX  #0
06B6 C000   0640 MLOOP  CPY  #0
06B8 D004   0650        BNE  CONT1
06BA C6CF   0660        DEC  $CF
06BC 3037   0670        BMI  END
06BE 88     0680 CONT1  DEY
06BF B1CB   0690        LDA  ($CB),Y
06C1 91CD   0700        STA  ($CD),Y
06C3 E8     0710        INX
06C4 D0F0   0720        BNE  MLOOP
06C6 E6CC   0730        INC  $CC
06C8 E6CE   0740        INC  $CE
06CA D0EA   0750        BNE  MLOOP
            0760 ;
            0770 ; SUBROUTINE TO INPUT/OUTPUT DATA BLOCKS
            0780 ; USR(IO,IOCB#,CMD,ADR,LEN)
            0790 ; COMMANDS: GET=7 PUT=11
06CC        0800 IO     =    1740
            0810 ;
06CC 68     0820        PLA
06CD 68     0830        PLA
06CE 68     0840        PLA           ; IOCB NUMBER
06CF 0A     0850        ASL  A
06D0 0A     0860        ASL  A
06D1 0A     0870        ASL  A
06D2 0A     0880        ASL  A        ; * 16
06D3 AA     0890        TAX           ; OFFSET
06D4 68     0900        PLA
06D5 68     0910        PLA
06D6 9D4203 0920        STA  $342,X   ; COMMAND BYTE
06D9 68     0930        PLA
06DA 9D4503 0940        STA  $345,X   ; BUFFER ADDRESS HI BYTE
06DD 68     0950        PLA
06DE 9D4403 0960        STA  $344,X   ; BUFFER ADDRESS LO BYTE
06E1 68     0970        PLA
06E2 9D4903 0980        STA  $349,X   ; BUFFER LENGTH HI BYTE
06E5 68     0990        PLA
06E6 9D4803 1000        STA  $348,X   ; BUFFER LENGTH LO BYTE
06E9 2056E4 1010        JSR  $E456
06EC BD4303 1020        LDA  835,X    ; GET STATUS
06EF 85D4   1030        STA  $D4
06F1 A900   1040        LDA  #0
06F3 85D5   1050        STA  $D5
06F5 60     1060 END    RTS
06F6        1070        .END
```

AIR NAVIGATION/*RNAV*

DATA DISK PROGRAM

DATA DISK PROGRAM

(Machine language subroutines source code on next page)

```
100 REM AIR NAVIGATION/*RNAV* DISK copyright 1983 ROBERT A. TIMS
110 REM 1-21-84 FORMATS AND CREATES THE DATA DISK - NOTE: TEXT IS INVERSE VIDEO
120 DIM D$(5002),F$(22),BLINK$(29)
130 CLEAR=1664:IO=1740:TEXT=39824:BLINK$="%KP)K-FIJP)pP)J
FFKLbd":OPEN #1,4,0,"K"
140 GRAPHICS 0:POKE 16,112:POKE 53774,112:POKE 712,112:POKE 710,112
150 DL=PEEK(560)+PEEK(561)*256:POKE DL+3,70:A=PEEK(548)+PEEK(549)*256
160 FOR X=6 TO 28:POKE DL+X,6:NEXT X:POKE 710,74:POKE 711,74
200 POSITION 23,0:? "INSERT A DISK":POSITION 24,1:? "INTO DRIVE 1"
210 POSITION 20,2:? "(FORMATTED OR BLANK)":POSITION 4,5:? CHR$(138);" WARNING! ";CHR$(138)
220 POSITION 3,6:? "this operation":POSITION 23,6:? "will erase any":POSITION 2,7:? "data on the disk"
230 POSITION 3,9:? "do you want to":POSITION 1,10:? "format a data disk"
240 POSITION 8,11:? "y";CHR$(15);"n";CHR$(31):X=USR(ADR("h)Kh*h()L\d"),ADR(BLINK$))
250 GOSUB 800:IF K<>89 AND K<>121 AND K<>78 AND K<>110 THEN 250
260 X=USR(ADR("hh*h()L\d"),A)
270 POKE 708,12:POKE 709,50:POKE 710,0:POKE 712,150:X=USR(CLEAR,TEXT,60,0)
280 POKE 560,38:POKE 561,129:POKE 88,144:POKE 89,155:IF K=78 OR K=110 THEN 610
290 TRAP 700:POSITION 25,0:? "FORMATTING":XIO 254,#2,0,0,"D:"
300 REM DISKNAME.DAT FILE
310 A=ADR(D$):POSITION 23,0:? "WRITING FILES":RESTORE 900
320 READ F$:IF F$="X" THEN 350
330 D$(LEN(D$)+1)=F$:IF F$="JONESBORO" THEN D$(LEN(D$)+1)=",":GOTO 320
340 D$(LEN(D$)+1)=CHR$(155):GOTO 320
350 OPEN #2,8,0,"D:DISKNAME.DAT":X=USR(IO,2,11,A,LEN(D$)):CLOSE #2:IF X>1 THEN 700
400 REM NAVDATA EMPTY FILE
410 D$=CHR$(255):D$(5002)=D$:D$(2)=D$:D$(1,1)=CHR$(0):D$(2,2)=CHR$(0)
420 OPEN #2,8,0,"D:NAV":X=USR(IO,2,11,A,5002):CLOSE #2:IF X>1 THEN 700
450 REM PRINTER FILE
460 D$=CHR$(0):D$(250)=D$:D$(2)=D$
470 OPEN #2,8,0,"D:P":X=USR(IO,2,11,A,21):CLOSE #2:IF X>1 THEN 800
500 REM FLIGHT FILES
510 FOR N=65 TO 90:F$="D:EMPTY.F ":F$(10)=CHR$(N):OPEN #2,8,0,F$
520 X=USR(IO,2,11,A,250):CLOSE #2:IF X>1 THEN 700
530 NEXT N
600 POSITION 0,0:? "MISSION ACCOMPLISHED"
610 POSITION 22,0:? "INSERT PRGM DISK":POSITION 4,1:? "PUSH ANY KEY":GOSUB 800
620 X=USR(CLEAR,TEXT,60,0):POSITION 2,0:? "LOADING THE AIR":POSITION 21,0:? "NAVIGATION/*RNAV*"
630 POSITION 6,1:? "PROGRAM":TRAP 140:RUN "D:RNAV"
700 X=USR(CLEAR,TEXT,60,0):POSITION 2,0:? "* DISK PROBLEM *":POSITION 24,0:? "TO CONTINUE-"
710 POSITION 4,1:? "PUSH ANY KEY":GOSUB 800:GOTO 140
800 POKE 20,0:SOUND 0,60,10,8
810 IF PEEK(20)<10 THEN 810
820 SOUND 0,0,0,0:TRAP 820:GET #1,K:K=K-INT(K/128)*128:TRAP 40000:RETURN
900 DATA DATA DISKETTE
910 DATA AIR NAVIGATION/*RNAV*
920 DATA COPYRIGHT 1983
930 DATA ROBERT A. TIMS
940 DATA 1616 ALONZO AVE.
950 DATA JONESBORO, AR  72401
960 DATA (501) 935-7586
970 DATA X
```

```
                0100 ; AIR NAVIGATION/*RNAV* copyright 1983 ROBERT A. TIMS
                0110 ; 1-21-84 BLINK ROUTINE FOR THE DATA DISK PROGRAM "DATA"
                0120 ;
0000            0130       *=   $600      ; ASM IN THIS LOCATION FOR OBTAINING THE SOURCE CODE
                0140 ; LOCATED IN STRING$ WITHIN THE USR FUNCTIONS
                0150 ;
0600 68         0160       PLA            ; BLINK ON
0601 A91E       0170       LDA  #30
0603 85CB       0180       STA  $CB       ; SET TIME TO 1/2 SEC.
0605 68         0190       PLA
0606 AA         0200       TAX
0607 68         0210       PLA
0608 A8         0220       TAY
0609 A907       0230       LDA  #7
060B 4C5CE4     0240       JMP  $E45C
060E 00         0250       BRK
060F 00         0260       BRK
0610 68         0270       PLA            ; BLINK OFF
0611 68         0280       PLA
0612 AA         0290       TAX
0613 68         0300       PLA
0614 A8         0310       TAY
0615 A907       0320       LDA  #7
0617 4C5CE4     0330       JMP  $E45C
061A 00         0340       BRK
061B 00         0350       BRK
061C A5CB       0360       LDA  $CB       ; BLINK ROUTINE
061E D014       0370       BNE  END       ; CHECK TIME INDEX LOCATED IN CB
0620 A91E       0380       LDA  #30
0622 85CB       0390       STA  $CB       ; RESET TIME INDEX TO 1/2 SEC.
0624 ADC602     0400       LDA  710
0627 C94A       0410       CMP  #74
0629 D004       0420       BNE  RED
062B A970       0430       LDA  #112
062D D002       0440       BNE  BLUE
062F A94A       0450 RED   LDA  #74
0631 8DC602     0460 BLUE  STA  710
0634 C6CB       0470 END   DEC  $CB
0636 4C62E4     0480       JMP  $E462
0639            0490       .END
```

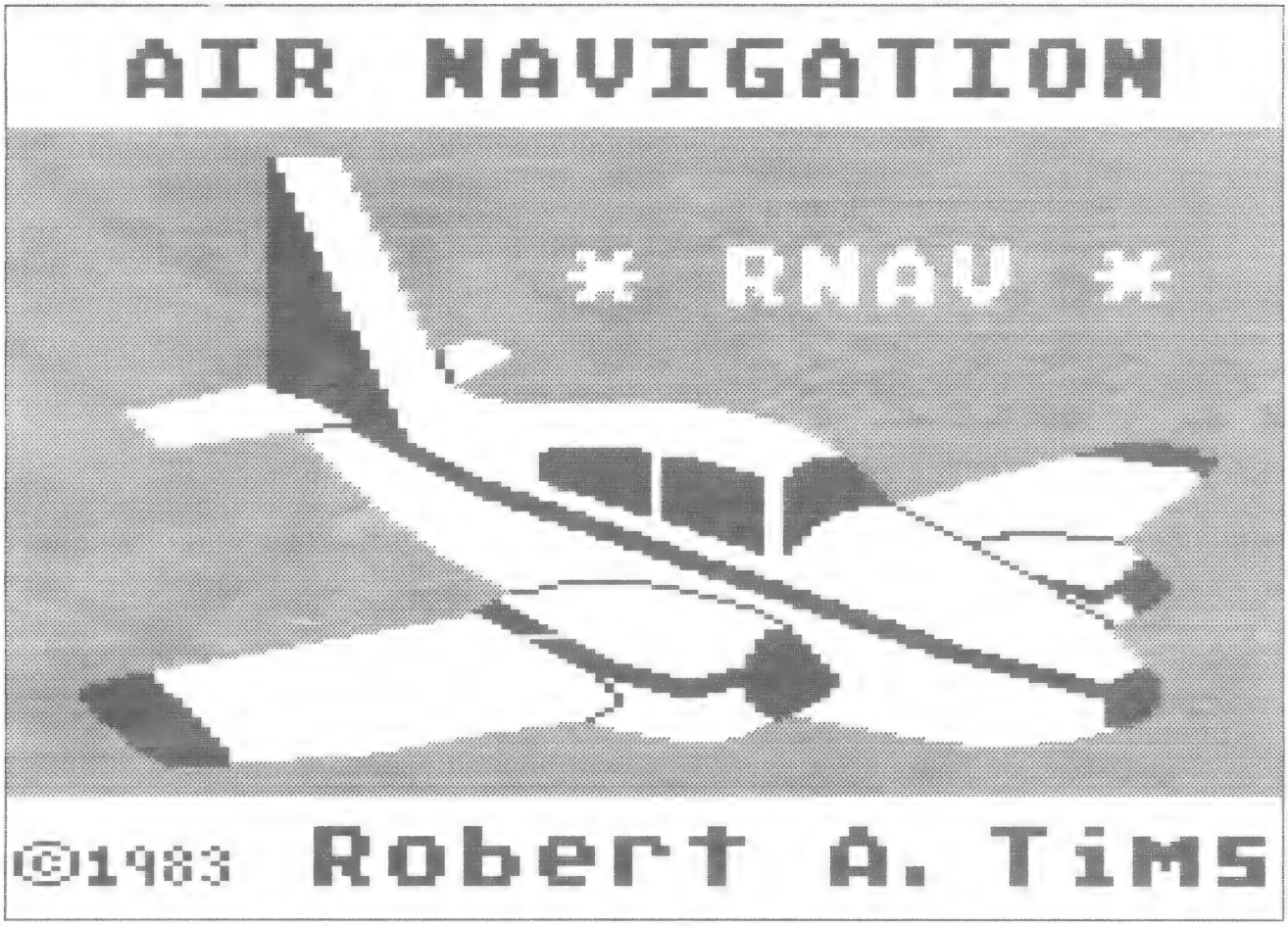
AIR NAVIGATION/*RNAV*

PERSONAL

PROGRAM/DATA DISK

THIS PROGRAM PREPARES THE RNAV PROGRAM/DATA DISK - PERSONAL COPY

```
100 REM AIR NAVIGATION/*RNAV* RNAVDISK  copyright 1983 ROBERT A. TIMS 1-21-84
120 DIM D$(5002),F$(22):IO=1740:A=ADR(D$)
130 ? ")":? "THE FOLLOWING SHOULD BE ON THE DISK:":?
140 ? "1. DOS.SYS":? "2. DUP.SYS":? "3. AUTORUN.SYS":? "4. AIRCRAFT.PIX"
150 ? "5. SORT":? "6. RNAVML":? "7. RNAV":? :? :? "INSERT DISK INTO DRIVE 1 - PUSH START"
160 IF PEEK(53279)<>6 THEN 160
170 POSITION 14,18:? "I'M WORKING!"
180 FOR X=IO TO 1781:READ N:POKE X,N:NEXT X:REM LOAD MACHINE LANGUAGE FILES
200 REM DISKNAME.DAT FILE
210 READ F$:IF F$="X" THEN 250
220 D$(LEN(D$)+1)=F$:IF F$="JONESBORO" THEN D$(LEN(D$)+1)=",":GOTO 200
230 D$(LEN(D$)+1)=CHR$(155):GOTO 200
250 OPEN #1,8,0,"D:DISKNAME.DAT":X=USR(IO,1,11,A,LEN(D$)):CLOSE #1:IF X>1 THEN 750
300 REM NAVDATA EMPTY FILE
310 D$=CHR$(255):D$(5002)=D$:D$(2)=D$:D$(1,2)=""
320 OPEN #1,8,0,"D:NAV":X=USR(IO,1,11,A,5002):CLOSE #1:IF X>1 THEN 750
400 REM PRINTER FILE
410 D$=CHR$(0):D$(250)=D$:D$(2)=D$
420 OPEN #1,8,0,"D:P":X=USR(IO,1,11,A,21):CLOSE #1:IF X>1 THEN 750
500 REM FLIGHT FILES
510 FOR N=65 TO 90:F$="D:EMPTY.F ":F$(10)=CHR$(N):OPEN #1,8,0,F$
520 X=USR(IO,1,11,A,250):CLOSE #1:IF X>1 THEN 750
530 NEXT N
600 REM DISK DIRECTORY - F$(2,5) ARE CHR$(0)'S:IN 650 F$(6) IS CHR$(28)
620 F$="B           ":POKE 769,1:POKE 770,82:GOSUB 700
630 POKE 773,INT(A/256):POKE 772,A-PEEK(773)*256:POKE 778,104:POKE 779,1
640 D$(4,5)="":POKE 770,87:GOSUB 700:POKE 778,109:POKE 770,82:GOSUB 700
650 FOR N=4 TO 7:D$(N*16+1)=F$:F$="B0000 *RAT*":NEXT N:POKE 770,87:GOSUB 700
670 FOR N=0 TO 7:D$(N*16+1)=F$:NEXT N:FOR N=110 TO 112:POKE 778,N
680 GOSUB 700:NEXT N:? :? "MISSION ACCOMPLISHED":END
700 X=USR(ADR("h Sd`")):IF PEEK(771)<>1 THEN 750:REM 104,32,83,228,96
710 RETURN
750 ? :? "WE HAVE A PROBLEM!!!!":END
800 DATA 104,104,104,10,10,10,10,170,104,104,157,66,3,104,157,69,3,104,157,68,3
810 DATA 104,157,73,3,104,157,72,3,32,86,228,189,67,3,133,212,169,0,133,213,96
850 DATA RNAV DISK,AIR NAVIGATION/*RNAV*,COPYRIGHT 1983,ROBERT A. TIMS
860 DATA 1616 ALONZO AVE.,JONESBORO, AR  72401,(501) 935-7586,X
```



AIRCRAFT PICTURE DOCUMENTATION

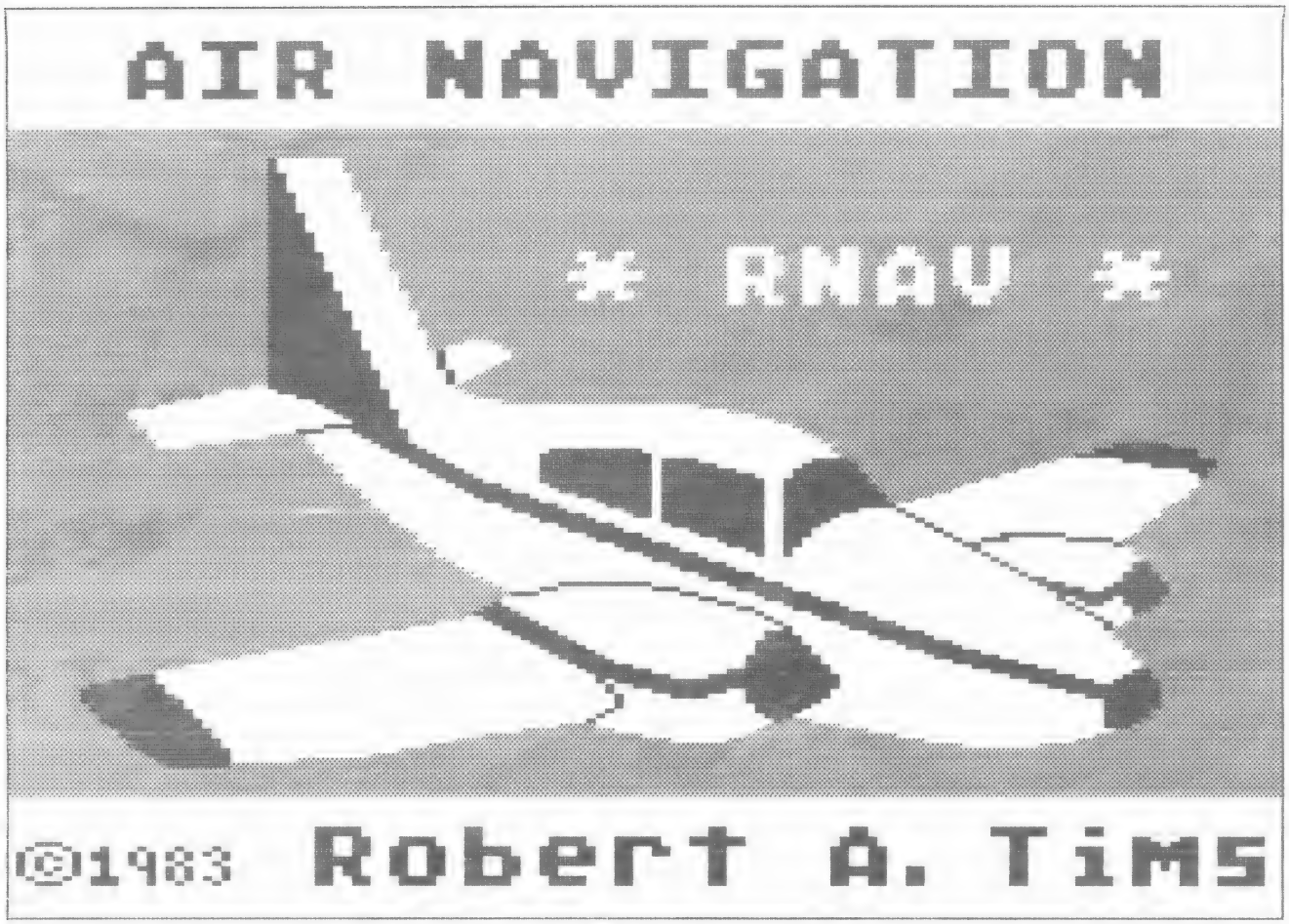
Print Picture Source Code

Print Picture Basic Program

Picture File Listing

Picture File Program

```
                0100 ; AIR NAVIGATION/*RNAV* PRPIX.SRC  copyright 1983 ROBERT A. TIMS
0000            0110        .OPT NOEJECT   ; OCTOBER 25, 1983
0000            0120        *=   $600      ; SUBROUTINE TO CHANGE EACH 4 PIXEL BYTE TO 16 BIT GRAPHIC BYTES
0600 68         0130        PLA
0601 68         0140        PLA
0602 85CF       0150        STA  $CF       ; GR$ HI BYTE
0604 68         0160        PLA
0605 85CE       0170        STA  $CE       ; GR$ LO BYTE
0607 68         0180        PLA
0608 68         0190        PLA
0609 85CB       0200        STA  $CB       ; PIX BYTE
060B A00F       0210        LDY  #15
060D A900       0220        LDA  #0
060F 85CD       0230        STA  $CD
0611 38         0240        SEC
0612 26CD       0250 LOOP   ROL  $CD
0614 26CD       0260        ROL  $CD
0616 A5CB       0270        LDA  $CB
0618 24CD       0280        BIT  $CD       ; CHECK FOR RED OR BLACK
061A F00E       0290        BEQ  ONE
061C A903       0300        LDA  #3
061E A204       0310        LDX  #4
0620 91CE       0320 BLK    STA  ($CE),Y
0622 88         0330        DEY
0623 3032       0340        BMI  END
0625 CA         0350        DEX
0626 D0F8       0360        BNE  BLK
0628 F0E8       0370        BEQ  LOOP
062A A5CB       0380 ONE    LDA  $CB
062C 66CD       0390        ROR  $CD
062E 24CD       0400        BIT  $CD       ; CHECK FOR WHITE
0630 F015       0410        BEQ  ZERO      ; GRML$(49,49)=CHR$(208) FOR SHADED SKY - BNE ZERO
0632 26CD       0420        ROL  $CD
0634 A202       0430        LDX  #2
0636 A901       0440 WHITE  LDA  #1
0638 91CE       0450        STA  ($CE),Y
063A 88         0460        DEY
063B A902       0470        LDA  #2
063D 91CE       0480        STA  ($CE),Y
063F 88         0490        DEY
0640 3015       0500        BMI  END
0642 CA         0510        DEX
0643 D0F1       0520        BNE  WHITE
0645 F0CB       0530        BEQ  LOOP
0647 26CD       0540 ZERO   ROL  $CD
0649 A204       0550        LDX  #4
064B A900       0560        LDA  #0
064D 91CE       0570 BLUE   STA  ($CE),Y
064F 88         0580        DEY
0650 3005       0590        BMI  END
0652 CA         0600        DEX
0653 D0F8       0610        BNE  BLUE
0655 F0BB       0620        BEQ  LOOP
0657 60         0630 END    RTS
```




```
100 REM AIR NAVIGATION/*RNAV* PRPIX.BAS  copyright 1983 ROBERT A. TIMS 1-21-84
110 POKE 106,128:GRAPHICS 0:? :? "SET PRINTER FRICTION!"
120 POKE 710,0:FOR A=1740 TO 1781:READ D:POKE A,D:NEXT A:REM I/O MACHINE LANGUAGE
130 DATA 104,104,104,10,10,10,10,170,104,104,157,66,3,104,157,69,3,104,157,68,3
140 DATA 104,157,73,3,104,157,72,3,32,86,228,189,67,3,133,212,169,0,133,213,96
160 OPEN #1,4,0,"D:AIRCRAFT.PIX":X=USR(1740,1,7,33062,7882):CLOSE #1:IF X>3 THEN ? "ERROR-";X:END
170 POKE 560,38:POKE 561,129:POKE 708,12:POKE 709,50:POKE 712,150:LPRINT :OPEN #1,8,0,"P"
180 DIM GRML$(88),GR$(22):GRML$=CHR$(0):GRML$(88)=GRML$:GRML$(2)=GRML$:GR$=GRML$:ML=ADR(GRML$):GR=ADR(GR$)+6
190 FOR A=1 TO 88:READ D:GRML$(A,A)=CHR$(D):NEXT A:REM MACHINE LANGUAGE FOR TRANSLATING PIXELS
200 DATA 104,104,133,207,104,133,206,104,104,133,203,160,15,169,0,133,205,56,38,205,38,205
230 DATA 165,203,36,205,240,14,169,3,162,4,145,206,136,48,50,202,208,248,240,232,165,203
240 DATA 102,205,36,205,240,21,38,205,162,2,169,1,145,206,136,169,2,145,206,136,48,21
250 DATA 202,208,241,240,203,38,205,162,4,169,0,145,206,136,48,5,202,208,248,240,187,96
260 REM SET PRINTER CODES - PROWRITER PRINTER - 16 BIT GRAPHIC BITS
270 FOR A=1 TO 6:READ D:GR$(A,A)=CHR$(D):NEXT A:DATA 27,83,48,48,49,54
280 REM PRINTER CODES - 12 CPI, LEFT MARGIN 6 SPACES, UNIDIRECTION, 36 LINES PER INCH
290 FOR A=1 TO 13:READ D:PRINT #1;CHR$(D);:NEXT A:DATA 27,78,27,76,48,48,54,27,62,27,84,48,52
300 GR$(7)="":PRINT #1;GR$;:GR$(7,7)="":GOSUB 410:REM "3,1,1,1,1,1,1,1,1,1,1,1,1,1,1,1";"1"
310 GOSUB 400:FOR LINE=11 TO 28:GOSUB 500:NEXT LINE:GRML$(49,49)=CHR$(208)
320 FOR LINE=29 TO 164:GOSUB 500:NEXT LINE:GRML$(49,49)=CHR$(240)
330 FOR LINE=165 TO 182:GOSUB 500:NEXT LINE:GOSUB 400
340 GR$(7)="":PRINT #1;GR$;:GR$(7,7)="":GOSUB 410:REM "3,2,2,2,2,2,2,2,2,2,2,2,2,2,2,2";"2"
360 FOR A=1 TO 11:READ D:PRINT #1;CHR$(D);:NEXT A:CLOSE #1:LPRINT :GRAPHICS 0:END :REM RESET PRINTER
370 DATA 27,65,27,60,27,81,27,76,48,49,53
400 FOR D=1 TO 6:GR$(7)="":PRINT #1;GR$;:GR$(7,7)="":GOSUB 410:NEXT D:RETURN :REM "3,15-0'S";"0"
410 FOR A=4 TO 35:PRINT #1;GR$;:NEXT A:GR$(22)="":PRINT #1;GR$:RETURN :REM "3"
500 FOR A=3 TO 36:D=USR(ML,GR,PEEK(33224+LINE*40+A)):IF A=3 THEN GR$(7,7)="":REM "3"
510 IF A=36 THEN GR$(22)="":PRINT #1;GR$:RETURN :REM "3"
520 PRINT #1;GR$;:NEXT A
```

AIR NAVIGATION/*RNAV*

PICTURE FILE LISTING

AIRCRAFT PICTURE FILE LISTING - page 1 of 5
AIR NAVIGATION/*RNAV* copyright 1983 ROBERT A. TIMS

```
100 REM PROGRAM TO LIST THE AIRCRAFT PIX FILE 1-21-84
110 REM AIR NAVIGATION/*RNAV* PIXFILE
120 POKE 106,108:GRAPHICS 0:FOR A=1740 TO 1781:READ D:POKE A,D:NEXT A:REM I/O MACHINE LANGUAGE
130 DATA 104,104,104,10,10,10,10,170,104,104,157,66,3,104,157,69,3,104,157,68,3
140 DATA 104,157,73,3,104,157,72,3,32,86,228,189,67,3,133,212,169,0,133,213,96
150 OPEN #1,4,0,"D:AIRCRAFT.PIX":X=USR(1740,1,7,33062,7882):CLOSE #1:IF X>3 THEN END
160 POKE 560,38:POKE 561,129:POKE 708,12:POKE 709,50:POKE 710,0:POKE 712,150
200 LPRINT CHR$(27);"Q";CHR$(27);"L015":REM COMPRESSED PITCH,MARGIN 15
210 FOR X=1 TO 5:LPRINT :NEXT X:LPRINT "AIRCRAFT PICTURE FILE LISTING - page 1 of 5"
220 LPRINT "AIR NAVIGATION/*RNAV* copyright 1983 ROBERT A. TIMS"
230 LPRINT :LPRINT :LPRINT :LIST "P":LPRINT :LPRINT :LPRINT
240 LPRINT "DISPLAY LIST:  STARTS $8126 (33062) & ENDS $81EF (33263) = 202 BYTES"
250 LPRINT :OPEN #1,8,0,"P"
260 FOR X=1 TO 32:PRINT #1;PEEK(33061+X);" ";:NEXT X:PRINT #1
270 FOR Y=0 TO 4:FOR X=1 TO 34:PRINT #1;PEEK((33093+X)+Y*34);" ";:NEXT X
280 PRINT #1:NEXT Y:PRINT #1:PRINT #1:PRINT #1
290 PRINT #1;"SCREEN MEMORY:  STARTS $81F0 (33264) & ENDS $9FEF (40943) = 7680 BYTES"
300 LPRINT CHR$(27);"L007";CHR$(27);"(006.";CHR$(12):REM MARGIN 7,TAB 6, TOF
310 FOR X=1 TO 4:PRINT #1;"AIRCRAFT PICTURE FILE LISTED BY SCAN LINE NUMBER copyright 1983 ROBERT A. TIMS";
320 PRINT #1,"page ";X+1;" of 5":PRINT #1:PRINT #1:PRINT #1
330 FOR Y=1 TO 48:PRINT #1;(X-1)*48+Y;CHR$(9);:REM TAB
340 FOR Z=0 TO 39:PRINT #1;PEEK(33224+((X-1)*48+Y)*40+Z);" ";:NEXT Z
350 PRINT #1:NEXT Y:PRINT #1;CHR$(12):NEXT X:CLOSE #1:GRAPHICS 0:END
```

DISPLAY LIST: STARTS $8126 (33062) & ENDS $81EF (33263) = 202 BYTES

```
112 112 112 78 240 129 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14
14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14
14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 78 0 144 14 14
14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14
14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14
14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 14 65 38 129
```

SCREEN MEMORY: STARTS $81F0 (33264) & ENDS $9FEF (40943) = 7680 BYTES

1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
3 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
5 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
6 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
7 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
8 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
9 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
10 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
11 0 0 0 0 0 0 2 128 42 168 42 160 0 0 40 40 2 128 40 40 42 168 10 168 2 128 42 168 42 168 10 160 40 40 0 0 0 0 0 0
12 0 0 0 0 0 0 2 128 42 168 42 160 0 0 40 40 2 128 40 40 42 168 10 168 2 128 42 168 42 168 10 160 40 40 0 0 0 0 0 0
13 0 0 0 0 0 0 10 160 2 128 40 40 0 0 42 40 10 160 40 40 2 128 40 0 10 160 2 128 2 128 40 40 42 40 0 0 0 0 0 0
14 0 0 0 0 0 0 10 160 2 128 40 40 0 0 42 40 10 160 40 40 2 128 40 0 10 160 2 128 2 128 40 40 42 40 0 0 0 0 0 0
15 0 0 0 0 0 0 40 40 2 128 40 40 0 0 42 168 40 40 40 40 2 128 40 0 40 40 2 128 2 128 40 40 42 168 0 0 0 0 0 0
16 0 0 0 0 0 0 40 40 2 128 40 40 0 0 42 168 40 40 40 40 2 128 40 0 40 40 2 128 2 128 40 40 42 168 0 0 0 0 0 0
17 0 0 0 0 0 0 40 40 2 128 42 160 0 0 42 168 40 40 40 40 2 128 40 168 40 40 2 128 2 128 40 40 42 168 0 0 0 0 0 0
18 0 0 0 0 0 0 40 40 2 128 42 160 0 0 42 168 40 40 40 40 2 128 40 168 40 40 2 128 2 128 40 40 42 168 0 0 0 0 0 0
19 0 0 0 0 0 0 42 168 2 128 40 160 0 0 40 168 42 168 10 160 2 128 40 40 42 168 2 128 2 128 40 40 40 168 0 0 0 0 0 0
20 0 0 0 0 0 0 42 168 2 128 40 160 0 0 40 168 42 168 10 160 2 128 40 40 42 168 2 128 2 128 40 40 40 168 0 0 0 0 0 0
21 0 0 0 0 0 0 40 40 42 168 40 40 0 0 40 40 40 40 2 128 42 168 10 168 40 40 2 128 42 168 10 160 40 40 0 0 0 0 0 0
22 0 0 0 0 0 0 40 40 42 168 40 40 0 0 40 40 40 40 2 128 42 168 10 168 40 40 2 128 42 168 10 160 40 40 0 0 0 0 0 0
23 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
24 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
25 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
26 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
27 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
28 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
29 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
30 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
31 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
32 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
33 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
34 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
35 0 0 0 0 0 0 0 0 0 0 149 85 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
36 0 0 0 0 0 0 0 0 0 0 149 85 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
37 0 0 0 0 0 0 0 0 0 0 149 85 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
38 0 0 0 0 0 0 0 0 0 0 165 85 64 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
39 0 0 0 0 0 0 0 0 0 0 165 85 64 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
40 0 0 0 0 0 0 0 0 0 0 165 85 64 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
41 0 0 0 0 0 0 0 0 0 0 165 85 64 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
42 0 0 0 0 0 0 0 0 0 0 169 85 80 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
43 0 0 0 0 0 0 0 0 0 0 169 85 80 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
44 0 0 0 0 0 0 0 0 0 0 169 85 80 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
45 0 0 0 0 0 0 0 0 0 0 169 85 80 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
46 0 0 0 0 0 0 0 0 0 0 170 85 84 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
47 0 0 0 0 0 0 0 0 0 0 170 85 84 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
48 0 0 0 0 0 0 0 0 0 0 170 85 84 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

```
49  0 0 0 0 0 0 0 0 0 0 170 85 84 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
50  0 0 0 0 0 0 0 0 0 0 170 149 85 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
51  0 0 0 0 0 0 0 0 0 0 170 149 85 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
52  0 0 0 0 0 0 0 0 0 0 170 149 85 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
53  0 0 0 0 0 0 0 0 0 0 170 149 85 0 0 0 0 0 0 0 0 0 21 80 20 20 1 64 20 20 0 0 0 0 0 0 0 0 0 0
54  0 0 0 0 0 0 0 0 0 0 170 165 85 64 0 0 0 0 20 20 0 0 21 80 20 20 1 64 20 20 0 0 20 20 0 0 0 0 0 0
55  0 0 0 0 0 0 0 0 0 0 170 165 85 64 0 0 0 0 20 20 0 0 20 20 21 20 5 80 20 20 0 0 20 20 0 0 0 0 0 0
56  0 0 0 0 0 0 0 0 0 0 170 165 85 64 0 0 0 0 5 80 0 0 20 20 21 20 5 80 20 20 0 0 5 80 0 0 0 0 0 0
57  0 0 0 0 0 0 0 0 0 0 170 165 85 64 0 0 0 0 5 80 0 0 20 20 21 84 20 20 20 20 0 0 5 80 0 0 0 0 0 0
58  0 0 0 0 0 0 0 0 0 0 170 169 85 80 0 0 0 0 85 85 0 0 20 20 21 84 20 20 20 20 0 0 85 85 0 0 0 0 0 0
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64  0 0 0 0 0 0 0 0 0 0 170 170 85 84 0 0 0 0 0 0 0 0 20 20 20 20 20 20 1 64 0 0 0 0 0 0 0 0 0 0
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149  0 0 0 0 0 10 170 170 149 85 85 85 85 85 85 85 85 85 93 85 85 85 85 92 5 85 85 85 85 85 85 85 127 192 0 0 0 0 0 0
150  0 0 0 0 0 2 170 170 149 85 85 85 85 85 85 85 85 84 1 85 85 85 85 64 0 21 85 85 85 85 85 85 127 0 0 0 0 0 0 0
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174  0 0 0 3 240 0 0 0 0 0 0 60 60 15 240 60 0 15 240 63 240 63 252 0 0 63 192 0 0 3 192 0 0 252 248 63 240 0 0 0
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AIR NAVIGATION/*RNAV*

PICTURE FILE PROGRAM

"PIX.BAS" PROGRAM TO CREATE THE AIRCRAFT.PIX FILE

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1 REM DISPLAY LIST
2 DATA 112,112,112,78,240,129,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14
3 DATA 14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14
4 DATA 14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14
5 DATA 14,14,14,14,14,14,14,14,14,14,14,78,0,144,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14
6 DATA 14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14
7 DATA 14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14
8 DATA 14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,14,65,38,129
9 REM SCREEN DATA - LINE NUMBERS ARE THE SCAN LINE * 10
10 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
20 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
30 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
40 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
50 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
60 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
70 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
80 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
90 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
100 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
110 DATA 0,0,0,0,0,0,0,2,128,42,168,42,160,0,0,40,40,2,128,40,40
115 DATA 42,168,10,168,2,128,42,168,42,168,10,160,40,40,0,0,0,0,0,0
120 DATA 0,0,0,0,0,0,0,2,128,42,168,42,160,0,0,40,40,2,128,40,40
125 DATA 42,168,10,168,2,128,42,168,42,168,10,160,40,40,0,0,0,0,0,0
130 DATA 0,0,0,0,0,0,0,10,160,2,128,40,40,0,0,42,40,10,160,40,40
135 DATA 2,128,40,0,10,160,2,128,2,128,40,40,42,40,0,0,0,0,0,0
140 DATA 0,0,0,0,0,0,0,10,160,2,128,40,40,0,0,42,40,10,160,40,40
145 DATA 2,128,40,0,10,160,2,128,2,128,40,40,42,40,0,0,0,0,0,0
150 DATA 0,0,0,0,0,0,0,40,40,2,128,40,40,0,0,42,168,40,40,40,40
155 DATA 2,128,40,0,40,40,2,128,2,128,40,40,42,168,0,0,0,0,0,0
160 DATA 0,0,0,0,0,0,0,40,40,2,128,40,40,0,0,42,168,40,40,40,40
165 DATA 2,128,40,0,40,40,2,128,2,128,40,40,42,168,0,0,0,0,0,0
170 DATA 0,0,0,0,0,0,0,40,40,2,128,42,160,0,0,42,168,40,40,40,40
175 DATA 2,128,40,168,40,40,2,128,2,128,40,40,42,168,0,0,0,0,0,0
180 DATA 0,0,0,0,0,0,0,40,40,2,128,42,160,0,0,42,168,40,40,40,40
185 DATA 2,128,40,168,40,40,2,128,2,128,40,40,42,168,0,0,0,0,0,0
190 DATA 0,0,0,0,0,0,0,42,168,2,128,40,160,0,0,40,168,42,168,10,160
195 DATA 2,128,40,40,42,168,2,128,2,128,40,40,40,168,0,0,0,0,0,0
200 DATA 0,0,0,0,0,0,0,42,168,2,128,40,160,0,0,40,168,42,168,10,160
205 DATA 2,128,40,40,42,168,2,128,2,128,40,40,40,168,0,0,0,0,0,0
210 DATA 0,0,0,0,0,0,0,40,40,42,168,40,40,0,0,40,40,40,40,2,128
215 DATA 42,168,10,168,40,40,2,128,42,168,10,160,40,40,0,0,0,0,0,0
220 DATA 0,0,0,0,0,0,0,40,40,42,168,40,40,0,0,40,40,40,40,2,128
225 DATA 42,168,10,168,40,40,2,128,42,168,10,160,40,40,0,0,0,0,0,0
230 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
240 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
250 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
260 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
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270 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
280 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
290 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
300 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
310 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
320 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
330 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
340 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
350 DATA 0,0,0,0,0,0,0,0,0,0,149,85,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
360 DATA 0,0,0,0,0,0,0,0,0,0,149,85,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
370 DATA 0,0,0,0,0,0,0,0,0,0,149,85,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
380 DATA 0,0,0,0,0,0,0,0,0,0,165,85,64,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
390 DATA 0,0,0,0,0,0,0,0,0,0,165,85,64,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
400 DATA 0,0,0,0,0,0,0,0,0,0,165,85,64,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
410 DATA 0,0,0,0,0,0,0,0,0,0,165,85,64,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
420 DATA 0,0,0,0,0,0,0,0,0,0,169,85,80,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
430 DATA 0,0,0,0,0,0,0,0,0,0,169,85,80,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
440 DATA 0,0,0,0,0,0,0,0,0,0,169,85,80,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
450 DATA 0,0,0,0,0,0,0,0,0,0,169,85,80,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
460 DATA 0,0,0,0,0,0,0,0,0,0,170,85,84,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
470 DATA 0,0,0,0,0,0,0,0,0,0,170,85,84,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
480 DATA 0,0,0,0,0,0,0,0,0,0,170,85,84,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
490 DATA 0,0,0,0,0,0,0,0,0,0,170,85,84,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
500 DATA 0,0,0,0,0,0,0,0,0,0,170,149,85,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
510 DATA 0,0,0,0,0,0,0,0,0,0,170,149,85,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
520 DATA 0,0,0,0,0,0,0,0,0,0,170,149,85,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
530 DATA 0,0,0,0,0,0,0,0,0,0,170,149,85,0,0,0,0,0,0,0,0,21,80,20,20,1,64,20,20,0,0,0,0,0,0,0,0,0,0
540 DATA 0,0,0,0,0,0,0,0,0,0,170,165,85,64,0,0,0,0,20,20,0,0,21,80,20,20,1,64,20,20,0,0,20,20,0,0,0,0,0,0
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610 DATA 0,0,0,0,0,0,0,0,0,0,170,169,85,80,0,0,0,0,5,80,0,0,20,80,20,84,21,84,5,80,0,0,5,80,0,0,0,0,0,0
620 DATA 0,0,0,0,0,0,0,0,0,0,170,170,85,84,0,0,0,0,20,20,0,0,20,80,20,84,21,84,5,80,0,0,20,20,0,0,0,0,0,0
630 DATA 0,0,0,0,0,0,0,0,0,0,170,170,85,84,0,0,0,0,20,20,0,0,20,20,20,20,20,20,1,64,0,0,20,20,0,0,0,0,0,0
640 DATA 0,0,0,0,0,0,0,0,0,0,170,170,85,84,0,0,0,0,0,0,0,0,20,20,20,20,20,20,1,64,0,0,0,0,0,0,0,0,0,0
650 DATA 0,0,0,0,0,0,0,0,0,0,170,170,85,84,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
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670 DATA 0,0,0,0,0,0,0,0,0,0,170,170,149,85,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
680 DATA 0,0,0,0,0,0,0,0,0,0,170,170,149,85,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
690 DATA 0,0,0,0,0,0,0,0,0,0,170,170,149,85,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
700 DATA 0,0,0,0,0,0,0,0,0,0,170,170,165,85,64,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
710 DATA 0,0,0,0,0,0,0,0,0,0,170,170,165,85,64,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
720 DATA 0,0,0,0,0,0,0,0,0,0,170,170,165,85,64,21,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,80
730 DATA 0,0,0,0,0,0,0,0,0,0,170,170,165,85,65,85,64,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
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740 DATA 0,0,0,0,0,0,0,0,0,0,0,170,170,169,85,93,85,80,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
750 DATA 0,0,0,0,0,0,0,0,0,0,0,170,170,169,85,93,85,80,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
760 DATA 0,0,0,0,0,0,0,0,0,0,0,170,170,169,85,93,85,64,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
770 DATA 0,0,0,0,0,0,0,0,0,0,0,170,170,169,85,93,85,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
780 DATA 0,0,0,0,0,0,0,0,0,0,0,170,170,170,85,87,84,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
790 DATA 0,0,0,0,0,0,0,0,0,0,0,170,170,170,85,87,80,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
800 DATA 0,0,0,0,0,0,0,0,0,0,0,170,170,170,85,87,64,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
810 DATA 0,0,0,0,0,0,0,0,0,0,5,170,170,170,85,85,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
820 DATA 0,0,0,0,0,0,0,0,0,1,85,106,170,170,149,85,64,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
830 DATA 0,0,0,0,0,0,0,0,0,21,85,86,170,170,149,85,80,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
840 DATA 0,0,0,0,0,0,0,0,5,85,85,85,106,170,149,85,85,64,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
850 DATA 0,0,0,0,0,0,0,0,85,85,85,85,90,170,149,85,85,85,85,85,85,85,80,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
860 DATA 0,0,0,0,0,0,0,21,85,85,85,85,86,170,165,85,85,85,85,85,85,85,64,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
870 DATA 0,0,0,0,0,0,0,21,85,85,85,85,85,170,165,85,85,85,85,85,85,85,85,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
880 DATA 0,0,0,0,0,0,0,5,85,85,85,85,85,106,165,85,85,85,85,85,85,85,85,80,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
890 DATA 0,0,0,0,0,0,0,5,85,85,85,85,95,170,165,85,85,85,85,85,85,85,85,85,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
900 DATA 0,0,0,0,0,0,0,1,85,85,85,87,245,106,169,85,85,85,85,85,85,85,85,85,64,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
910 DATA 0,0,0,0,0,0,0,1,85,85,85,0,85,90,169,85,85,85,85,85,85,85,85,85,80,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
920 DATA 0,0,0,0,0,0,0,0,85,85,0,0,85,86,169,85,85,85,85,85,85,85,85,85,84,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
930 DATA 0,0,0,0,0,0,0,0,85,0,0,0,21,85,170,85,85,85,85,85,85,85,85,85,85,0,0,0,0,0,0,0,10,170,0,0,0,0,0,0,0
940 DATA 0,0,0,0,0,0,0,0,0,0,0,0,21,85,106,149,85,85,95,255,255,85,85,85,85,85,0,0,0,0,0,0,0,170,170,168
945 DATA 0,0,0,0,0
950 DATA 0,0,0,0,0,0,0,0,0,0,0,0,5,85,90,165,85,85,127,255,255,213,85,85,85,85,64,0,0,0,0,0,10,170,170,168
955 DATA 0,0,0,0,0
960 DATA 0,0,0,0,0,0,0,0,0,0,0,0,5,85,86,169,85,85,127,255,255,223,245,85,85,95,240,0,0,0,0,0,85,86,170,170
965 DATA 128,0,0,0,0
970 DATA 0,0,0,0,0,0,0,0,0,0,0,1,85,85,170,85,85,127,255,255,223,255,85,85,127,252,0,0,0,0,5,85,85,90,170
975 DATA 128,0,0,0,0
980 DATA 0,0,0,0,0,0,0,0,0,0,0,1,85,85,106,149,85,127,255,255,223,255,245,85,255,252,0,0,0,0,85,85,85,85,90
985 DATA 0,0,0,0,0
990 DATA 0,0,0,0,0,0,0,0,0,0,0,0,85,85,90,165,85,127,255,255,223,255,255,85,255,255,0,0,0,5,85,85,85,85,86
995 DATA 0,0,0,0,0
1000 DATA 0,0,0,0,0,0,0,0,0,0,0,0,85,85,86,169,85,127,255,255,223,255,255,215,255,255,0,0,0,85,85,85,85,85,84
1005 DATA 0,0,0,0,0
1010 DATA 0,0,0,0,0,0,0,0,0,0,0,0,21,85,85,170,149,95,255,255,223,255,255,215,255,255,192,0,5,85,85,85,85,85,84
1015 DATA 0,0,0,0,0
1020 DATA 0,0,0,0,0,0,0,0,0,0,0,0,5,85,85,106,165,87,255,255,223,255,255,215,255,255,192,0,21,85,85,85,85,85,80
1025 DATA 0,0,0,0,0
1030 DATA 0,0,0,0,0,0,0,0,0,0,0,0,5,85,85,90,170,85,127,255,223,255,255,215,255,255,240,1,85,85,85,85,85,85,80
1035 DATA 0,0,0,0,0
1040 DATA 0,0,0,0,0,0,0,0,0,0,0,0,1,85,85,86,170,149,87,255,223,255,255,215,255,255,240,21,85,85,85,85,85,85,64
1045 DATA 0,0,0,0,0
1050 DATA 0,0,0,0,0,0,0,0,0,0,0,0,1,85,85,85,106,169,85,255,223,255,255,215,255,255,253,85,85,85,85,85,85,85
1055 DATA 0,0,0,0,0,0
1060 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,85,85,85,90,170,85,95,223,255,255,215,255,253,87,85,85,85,85,85,85,84
1065 DATA 0,0,0,0,0,0
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1070 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,21,85,85,85,170,165,87,223,255,255,215,255,213,85,213,85,85,85,85,85,84
1075 DATA 0,0,0,0,0,0,0
1080 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,21,85,85,85,106,169,85,95,255,255,215,255,85,85,117,85,85,85,85,85,80
1085 DATA 0,0,0,0,0,0,0
1090 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,5,85,85,85,86,170,149,87,255,255,215,253,85,85,93,85,85,85,85,85,64
1095 DATA 0,0,0,0,0,0,0
1100 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,85,85,85,85,170,165,85,127,255,215,245,85,85,87,85,85,85,85,85,64
1105 DATA 0,0,0,0,0,0,0
1110 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,85,85,85,85,90,170,85,95,255,215,245,85,85,85,213,95,255,213,85
1115 DATA 0,0,0,0,0,0,0,0
1120 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,85,85,85,85,86,170,149,85,255,215,213,85,85,85,117,253,85,127,244
1125 DATA 0,0,0,0,0,0,0,0
1130 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,21,85,85,85,85,106,169,85,127,215,213,85,85,85,95,85,85,85,92
1135 DATA 0,0,0,0,0,0,0,0
1140 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,5,85,85,85,85,90,170,85,87,215,85,85,85,85,87,85,85,85,85
1145 DATA 0,0,0,0,0,0,0,0
1150 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,5,85,85,85,85,85,170,165,85,215,85,85,85,85,85,213,85,85,85
1155 DATA 0,0,0,0,0,0,0,0
1160 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,85,85,85,85,85,106,169,85,85,85,85,85,85,85,117,85,85,85,64
1165 DATA 0,0,0,0,0,0,0,0
1170 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,85,85,85,85,85,86,170,149,85,85,85,85,85,85,93,85,85,85,240
1175 DATA 0,0,0,0,0,0,0,0
1180 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,21,85,85,85,85,85,170,165,85,85,85,85,85,85,87,85,85,85,240
1185 DATA 0,0,0,0,0,0,0,0
1190 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,5,85,85,85,85,85,90,170,85,85,85,85,85,85,85,149,85,87,252
1195 DATA 0,0,0,0,0,0,0,0
1200 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,1,85,85,85,85,85,86,170,149,85,85,85,85,85,85,105,85,87,252
1205 DATA 0,0,0,0,0,0,0,0
1210 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,85,87,255,255,213,85,106,169,85,85,85,85,85,85,90,149,91,255
1215 DATA 0,0,0,0,0,0,0,0
1220 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,21,125,85,85,127,85,90,170,85,85,85,85,85,85,86,169,107,255
1225 DATA 0,0,0,0,0,0,0,0
1230 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,15,213,85,85,85,245,85,170,165,85,85,85,85,85,85,170,171,255
1235 DATA 0,0,0,0,0,0,0,0
1240 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,21,85,85,85,85,95,85,106,169,85,85,85,85,85,85,218,167,252
1245 DATA 0,0,0,0,0,0,0,0
1250 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,149,85,85,85,85,85,245,86,170,149,85,85,85,85,85,118,151,252
1255 DATA 0,0,0,0,0,0,0,0
1260 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,2,165,85,85,85,85,85,95,85,170,165,85,85,85,85,85,93,85,240
1265 DATA 0,0,0,0,0,0,0,0
1270 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,10,169,85,85,85,85,85,85,213,90,170,85,85,85,85,85,87,85,192
1275 DATA 0,0,0,0,0,0,0,0
1280 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,23,170,85,85,85,85,85,85,117,86,170,149,85,85,85,85,85,213,0
1285 DATA 0,0,0,0,0,0,0,0
1290 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,5,85,170,149,85,85,85,85,85,93,85,106,169,85,85,85,85,85,116,0
1295 DATA 0,0,0,0,0,0,0
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1300 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,1,85,85,106,165,85,85,85,85,85,87,85,90,170,85,85,85,85,85,112,0
1305 DATA 0,0,0,0,0,0
1310 DATA 0,0,0,0,0,0,0,0,0,6,8,9,0.0,85,85,85,90,169,85,85,85,85,85,127,85,85,170,165,85,85,85,85,80,0
1315 DATA 0,0,0,0,0,0
1320 DATA 0,0,0,0,0,0,0,0,0,0,0,0,21,85,85.85.86,170,85,85,85,85,85,127,213,85,106,169,85,85,85,85,80,0
1325 DATA 0,0,0,0,0,0
1330 DATA 0,0,0,0,0,0,0,0,0,0,0,5,85,85,85,85,85,170,149,85,85,85,85,255,213,85,86,170,149,85,85,85,84,0
1335 DATA 0,0,0,0,0,0
1340 DATA 0,0,0,0,0,0,0,0,0,0,1,85,85,85,85,85,85,106,165,85,85,85,85,255,245,85,85,170,165,85,85,85,84,0
1345 DATA 0,0,0,0,0,0
1350 DATA 0,0,0,0,0,0,0,0,0,0,85,85,85,85,85,85,85,90,169,85,85,85,85,255,245,85,85,90,170,85,85,85,85,0
1355 DATA 0,0,0,0,0,0
1360 DATA 0,0,0,0,0,0,0,0,0,21,85,85,85,85,85,85,85,86,170,85,85,85,87,255,253,85,85,86,170,165,85,85,85,0
1365 DATA 0,0,0,0,0,0
1370 DATA 0,0,0,0,0,0,0,0,5,85,85,85,85,85,85,85,85,85,170,149,85,85,87,255,253,85,85,85,106,170,85,85,85,64
1375 DATA 0,0,0,0,0,0
1380 DATA 0,0,0,0,0,0,0,1,85,85,85,85,85,85,85,85,85,85,106,169,85,85,87,255,255,85,85,85,86,170,165,85,85,64
1385 DATA 0,0,0,0,0,0
1390 DATA 0,0,0,0,0,0,0,85,85,85,85,85,85,85,85,85,85,85,90,170,149,85,107,255,255,85,85,85,85,106,170,85,85,240
1395 DATA 0,0,0,0,0,0
1400 DATA 0,0,0,0,0,0,42,85,85,85,85,85,85,85,85,85,85,85,86,170,169,86,171,255,255,213,85,85,85,86,170,165,87
1405 DATA 240,0,0,0,0,0,0
1410 DATA 0,0,0,0,0,2,170,85,85,85,85,85,85,85,85,85,85,85,87,106,170,170,171,255,255,213,85,85,85,85,106,170,95
1415 DATA 252,0,0,0,0,0,0
1420 DATA 0,0,0,0,0,42,170,149,85,85,85,85,85,85,85,85,85,85,85,214,170,170,171,255,255,213,85,85,85,85,86,170
1425 DATA 175,252,0,0,0,0,0,0
1430 DATA 0,0,0,0,0,170,170,149,85,85,85,85,85,85,85,85,85,85,85,213,106,170,151,255,255,85,85,85,85,85,85,106
1435 DATA 175,252,0,0,0,0,0,0
1440 DATA 0,0,0,0,0,170,170,165,85,85,85,85,85,85,85,85,85,85,85,117,86,169,87,255,255,85,85,85,85,85,85,86
1445 DATA 175,252,0,0,0,0,0,0
1450 DATA 0,0,0,0,0,170,170,169,85,85,85,85,85,85,85,85,85,85,85,117,85,85,87,255,253,85,85,85,85,85,85,85
1455 DATA 127,252,0,0,0,0,0,0
1460 DATA 0,0,0,0,0,42,170,169,85,85,85,85,85,85,85,85,85,85,85,117,85,85,85,255,245,85,85,85,85,85,85,85
1465 DATA 127,252,0,0,0,0,0,0
1470 DATA 0,0,0,0,0,42,170,170,85,85,85,85,85,85,85,85,85,85,85,213,85,85,85,255,213,85,85,85,85,85,85,85
1475 DATA 127,240,0,0,0,0,0,0
1480 DATA 0,0,0,0,0,10,170,170,85,85,85,85,85,85,85,85,85,85,87,85,85,85,85,127,85,85,85,85,85,85,85,85
1485 DATA 127,240,0,0,0,0,0,0
1490 DATA 0,0,0,0,0,10,170,170,149,85,85,85,85,85,85,85,85,85,93,85,85,85,85,92,5,85,85,85,85,85,85,85
1495 DATA 127,192,0,0,0,0,0,0
1500 DATA 0,0,0,0,0,2,170,170,149,85,85,85,85,85,85,85,85,84,1,85,85,85,85,64,0,21,85,85,85,85,85,85
1505 DATA 127,0,0,0,0,0,0,0
1510 DATA 0,0,0,0,0,0,170,170,165,85,85,85,85,85,85,85,84,0,0,21,85,85,85,0,0,0,85,85,85,85,85,85
1515 DATA 80,0,0,0,0,0,0,0
1520 DATA 0,0,0,0,0,0,170,170,165,85,85,85,85,85,85,84,0,0,0,0,85,85,84,0,0,0,1,85,85,85,85,85
1525 DATA 0,0,0,0,0,0,0,0
1530 DATA 0,0,0,0,0,0,42,170,169,85,85,85,85,85,85,0,0,0,0,0,1,85,64,0,0,0,0,5,85,85,85,80
1535 DATA 0,0,0,0,0,0,0,0
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1540 DATA 0,0,0,0,0,0,42,170,169,85,85,85,85,85,64,0,0,0,0,0,0,0,0,0,0,0,0,5,85,80,0,0,0,0,0,0,0,0
1550 DATA 0,0,0,0,0,0,10,170,170,85,85,85,85,80,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1560 DATA 0,0,0,0,0,0,2,170,170,85,85,85,84,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1570 DATA 0,0,0,0,0,0,0,170,170,85,84,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1580 DATA 0,0,0,0,0,0,0,42,170,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1590 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1600 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1610 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1620 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1630 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1640 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1650 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1660 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1670 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1680 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1690 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1700 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1710 DATA 0,0,0,0,0,0,0,0,0,0,0,63,240,0,0,60,0,0,0,0,0,3,192,0,0,15,0,0,0,63,252,3,192,0,0,0,0,0,0,0
1720 DATA 0,0,0,0,0,0,0,0,0,0,0,63,240,0,0,60,0,0,0,0,0,3,192,0,0,15,0,0,0,63,252,3,192,0,0,0,0,0,0,0
1730 DATA 0,0,0,0,0,0,0,0,0,0,0,60,60,15,240,60,0,15,240,63,240,63,252,0,0,63,192,0,0,3,192,0,0,240,60,63,240
1735 DATA 0,0,0,0,0,0
1740 DATA 3,240,0,0,0,0,0,0,0,60,60,15,240,60,0,15,240,63,240,63,252,0,0,63,192,0,0,3,192,0,0,252,248,63,240,0,0,0
1750 DATA 0,0,0,12,12,12,12,12,12,0,0,60,60,60,60,63,240,60,60,60,60,3,192,0,0,240,240,0,0,3,192,15,192,255,252
1755 DATA 60,0,0,0,0,0,0,0,48,195
1760 DATA 60,51,51,51,0,0,60,60,60,60,63,240,60,60,60,60,3,192,0,0,240,240,0,0,3,192,15,192,255,252,60,0,0,0,0
1770 DATA 0,0,0,51,51,60,51,51,3,0,0,63,240,60,60,60,60,63,252,60,0,3,192,0,0,240,240,0,0,3,192,3,192,255,252
1775 DATA 63,240,0,0,0,0,0,0,51,3
1780 DATA 12,51,12,12,0,0,63,240,60,60,60,60,63,252,60,0,3,192,0,0,240,240,0,0,3,192,3,192,243,60,63,240,0,0,0
1790 DATA 0,0,0,51,51,12,15,51,3,0,0,60,240,60,60,60,60,60,0,60,0,3,192,0,0,255,240,240,0,3,192,3,192,243,60
1795 DATA 0,240,0,0,0,0,0,0,48,195
1800 DATA 12,3,51,3,0,0,60,240,60,60,60,60,60,0,60,0,3,192,0,0,255,240,240,0,3,192,3,192,240,60,0,240,0,0,0
1810 DATA 0,0,0,12,12,63,3,51,51,0,0,60,60,15,240,63,240,15,240,60,0,3,192,0,0,240,240,240,0,3,192,15,240
1815 DATA 240,60,63,240,0,0,0,0,0,0,3,240,63
1820 DATA 3,12,12,0,0,60,60,15,240,63,240,15,240,60,0,3,192,0,0,240,240,240,0,3,192,15,240,240,60,63,240,0,0,0
1830 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1840 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1850 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1860 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1870 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1880 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1890 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1900 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1910 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
1920 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
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2000 REM AIRNAVIGATION/*RNAV* copyright 1983 ROBERT A. TIMS 1-21-84
2010 REM PIX TO BE DISPLAYED WHILE THE RNAV PROGRAM IS BEING LOADED
2020 REM ANTIC MODE E IS USED
2050 DLIST=33062:REM 38,129
2060 PIX=33264:REM 240,129
2070 SIZE=192*40
2080 POKE 106,125:GRAPHICS 0
2100 FOR A=0 TO 201:READ D:POKE DLIST+A,D:NEXT A
2110 POKE 560,38:POKE 561,129
2120 POKE 708,12:POKE 709,50:POKE 710,0:POKE 712,150
2140 FOR A=0 TO SIZE-1:READ D:POKE PIX+A,D:NEXT A
2200 REM I/O MACHINE LANGUAGE
2210 FOR A=1740 TO 1781:READ D:POKE A,D:NEXT A
2220 DATA 104,104,104,10,10,10,10,170,104,104,157,66,3,104,157,69,3,104,157,68,3
2230 DATA 104,157,73,3,104,157,72,3,32,86,228,189,67,3,133,212,169,0,133,213,96
2240 OPEN #1,8,0,"D1:AIRCRAFT.PIX":X=USR(1740,1,11,DLIST,SIZE+202):CLOSE #1
2260 GRAPHICS 0:IF X>3 THEN ? "ERROR ";X
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P 270 037 937

RECEIPT FOR CERTIFIED MAIL

NO INSURANCE COVERAGE PROVIDED—
NOT FOR INTERNATIONAL MAIL
(See Reverse)

SENT TO: Gene Plagge
STREET AND NO.: APX Product Review
P.O., STATE AND ZIP CODE: P.O. Box 3705 Santa Clara, Ca. 95055

POSTAGE	$ 373
CERTIFIED FEE	75¢
SPECIAL DELIVERY	¢
RESTRICTED DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED	60¢
SHOW TO WHOM, DATE, AND ADDRESS OF DELIVERY	¢
SHOW TO WHOM AND DATE DELIVERED WITH RESTRICTED DELIVERY	¢
SHOW TO WHOM, DATE AND ADDRESS OF DELIVERY WITH RESTRICTED DELIVERY	¢
TOTAL POSTAGE AND FEES	$ 5.08
POSTMARK OR DATE	JAN 26 1984 SUNNYVALE, CAL. NETTLETON STA.

CONSULT POSTMASTER FOR FEES
OPTIONAL SERVICES
RETURN RECEIPT SERVICE

PS Form 3800, Apr. 1976

PS Form 3811, July 1982

● **SENDER:** Complete items 1, 2, 3, and 4.
Add your address in the "RETURN TO" space on reverse.

(CONSULT POSTMASTER FOR FEES)

1. The following service is requested (check one).
   - ☐ Show to whom and date delivered ..... ¢
   - ☐ Show to whom, date, and address of delivery .. ¢
2. ☐ **RESTRICTED DELIVERY**..... ¢
   (The restricted delivery fee is charged in addition to the return receipt fee.)

TOTAL $

3. ARTICLE ADDRESSED TO:
   APX Prod. Review

4. TYPE OF SERVICE:
   - ☐ REGISTERED ☐ INSURED
   - ☒ CERTIFIED ☐ COD
   - ☐ EXPRESS MAIL

   ARTICLE NUMBER: P 270 037 937

(Always obtain signature of addressee or agent)

I have received the article described above.
SIGNATURE ☐ Addressee ☐ Authorized agent
G Plagge

5. DATE OF DELIVERY: 1-30-84
   POSTMARK (may be on reverse side)

6. ADDRESSEE'S ADDRESS *(Only if requested)*

7. UNABLE TO DELIVER BECAUSE:

7a. EMPLOYEE'S INITIALS

RETURN RECEIPT

★ GPO: 1982-379-593